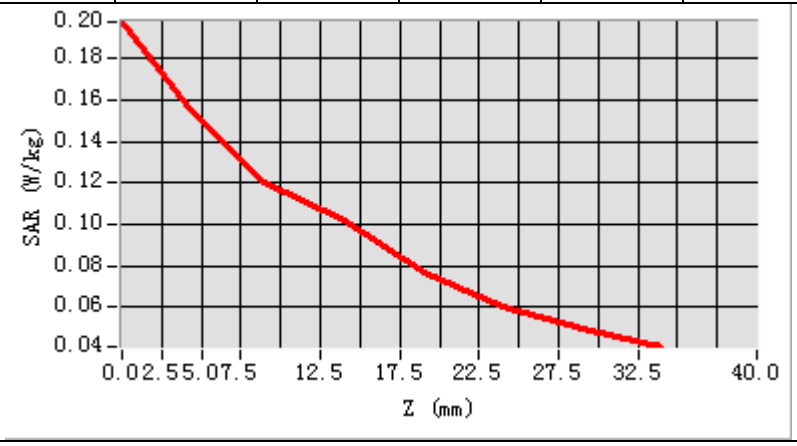
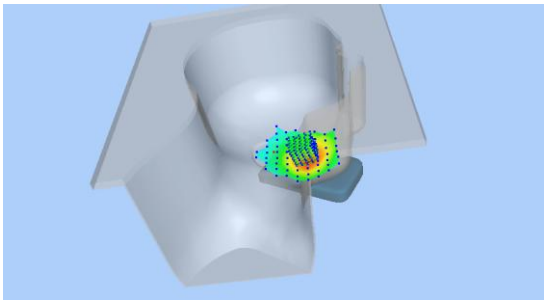
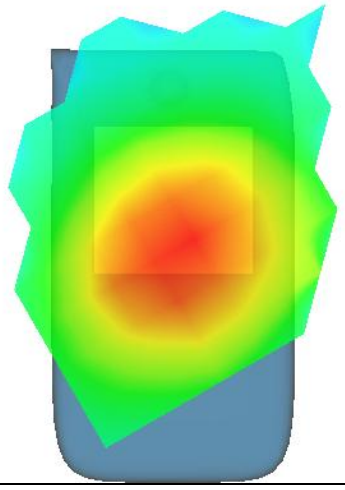
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1977	0.1580	0.1203	0.1021	0.0771	0.0601	0.0494



3D screen shot	Hot spot position
	

MEASUREMENT 2

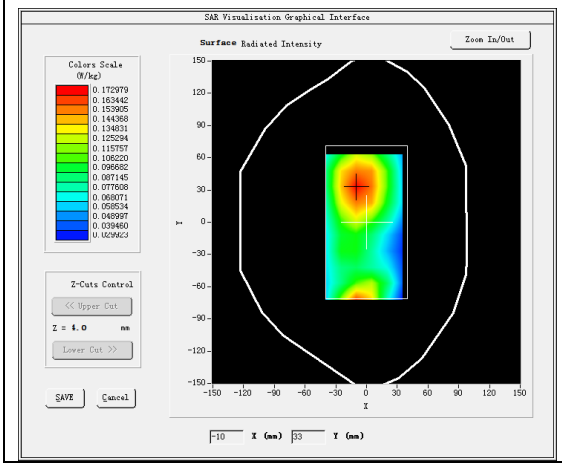
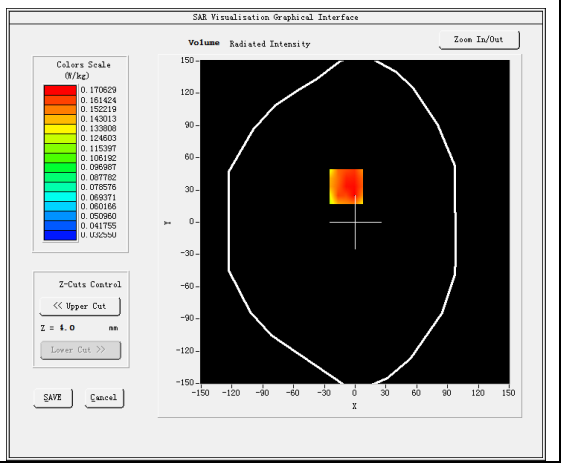
Date of measurement: 23/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

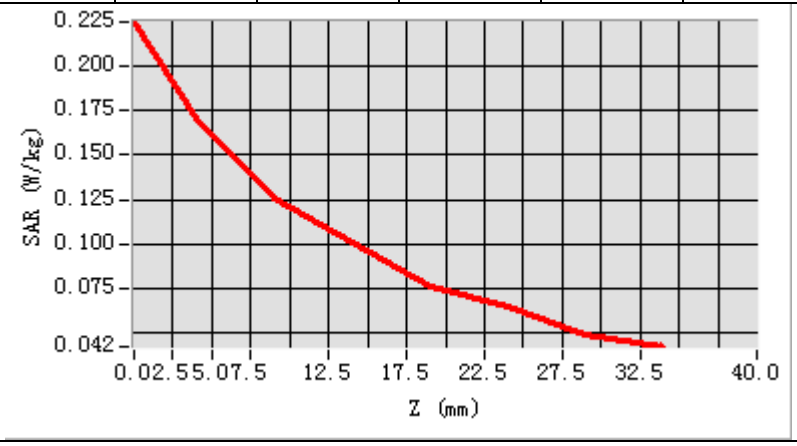
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.562119
Relative permittivity (imaginary part)	19.428495
Conductivity (S/m)	0.902777
Variation (%)	1.090000

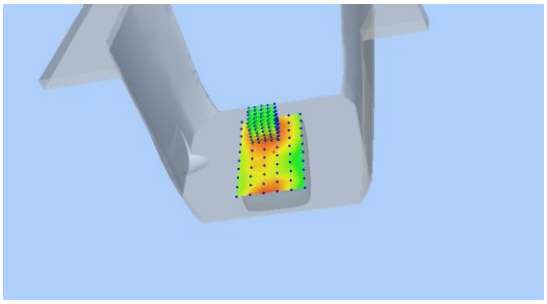
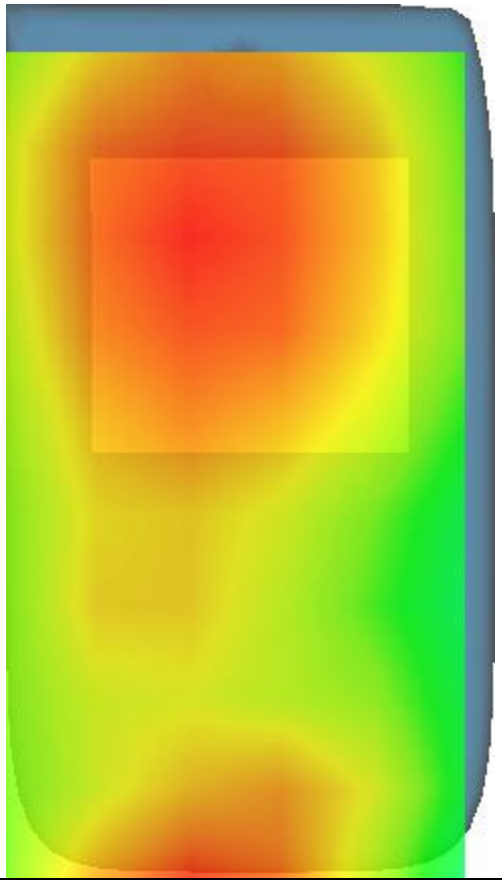
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=33.00
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.123796
SAR 1g (W/Kg)	0.164951

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2250	0.1706	0.1255	0.1011	0.0760	0.0648	0.0488



3D screen shot	Hot spot position
	

MEASUREMENT 3

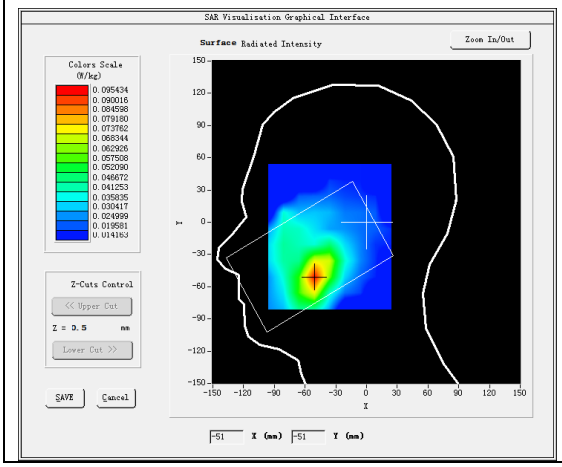
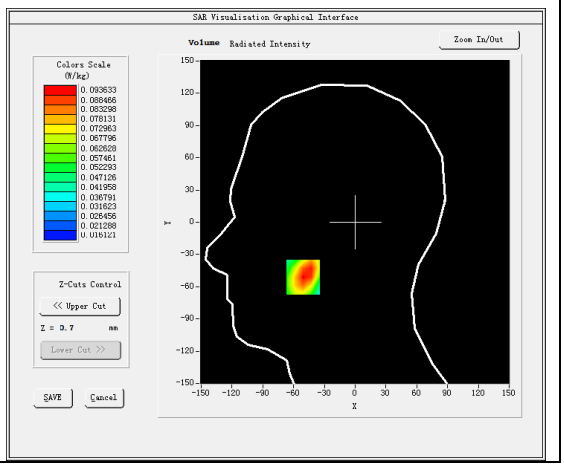
Date of measurement: 24/10/2023

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	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 2.0)
ConvF	2.63

B. SAR Measurement Results

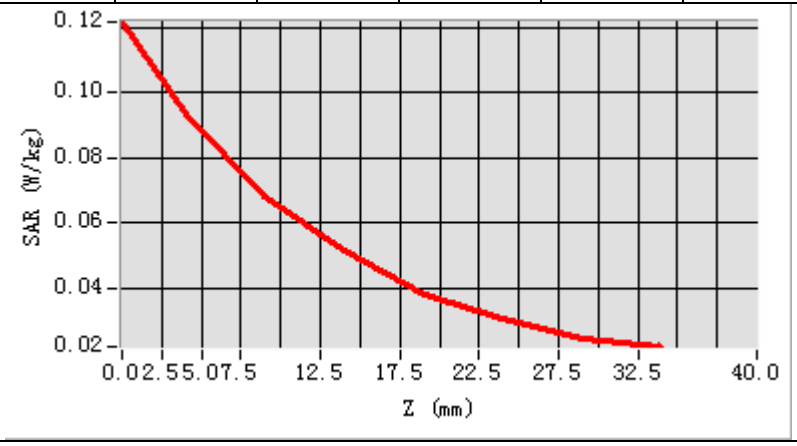
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	-2.650000

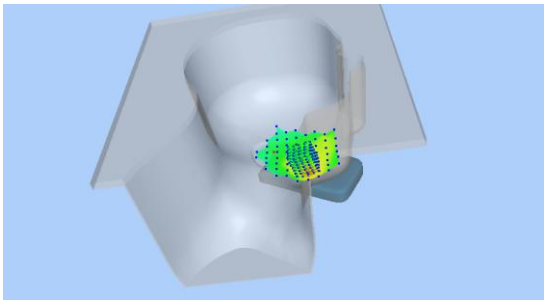
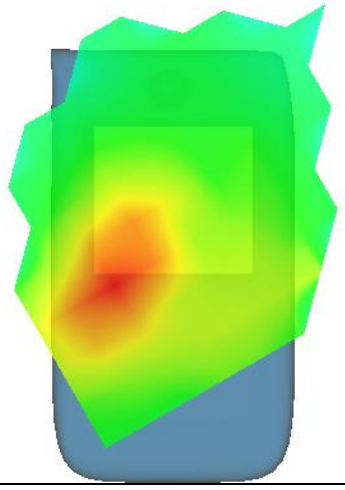
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00
SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.060980
SAR 1g (W/Kg)	0.093440

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1219	0.0936	0.0680	0.0513	0.0381	0.0306	0.0244



3D screen shot	Hot spot position
	

MEASUREMENT 4

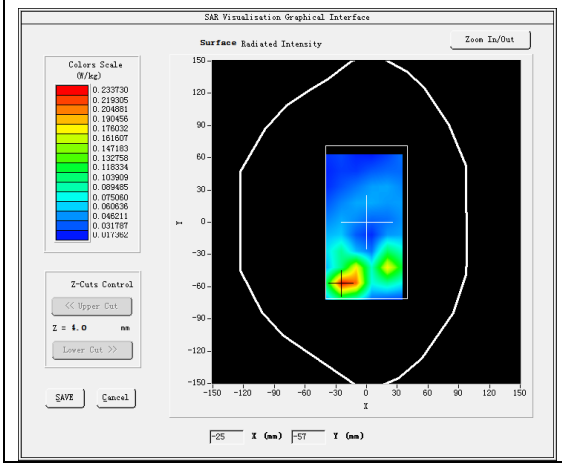
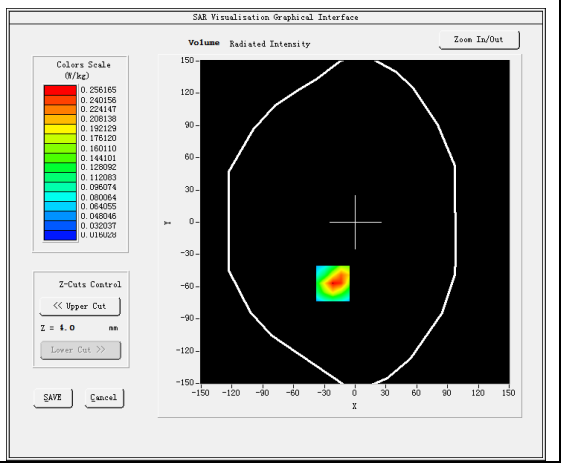
Date of measurement: 24/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

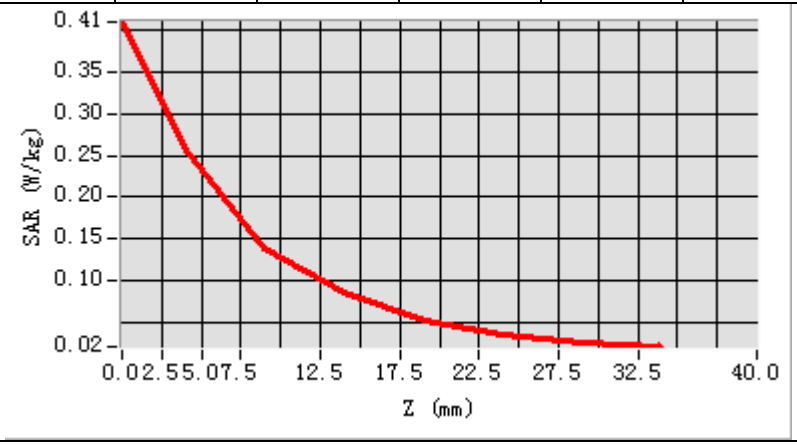
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	-0.620000

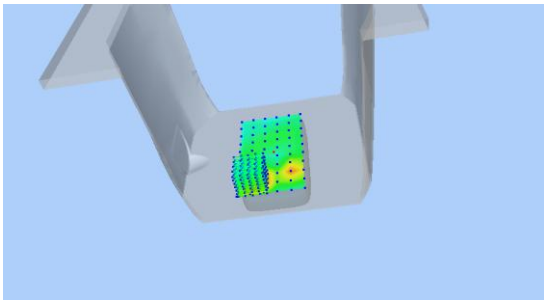
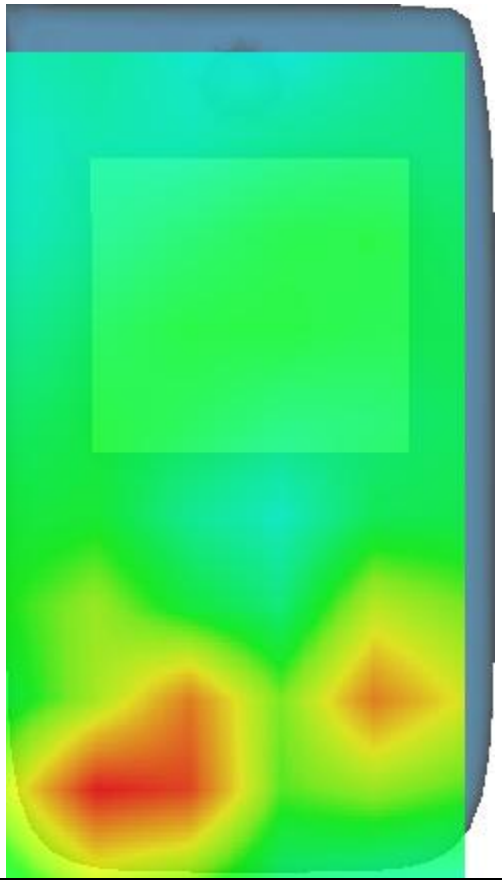
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-22.00, Y=-57.00
SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.131536
SAR 1g (W/Kg)	0.249258

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4102	0.2562	0.1395	0.0857	0.0515	0.0357	0.0261



3D screen shot	Hot spot position
	

MEASUREMENT 5

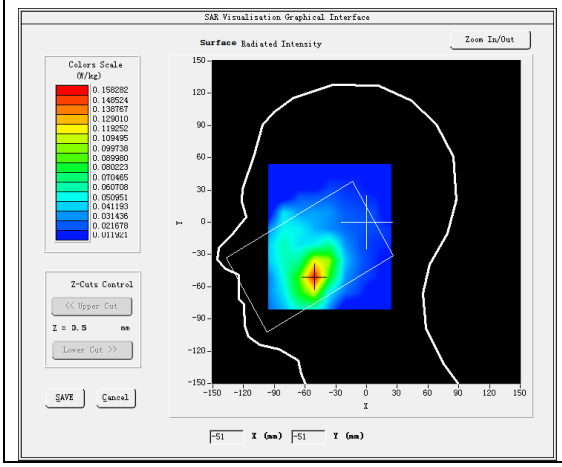
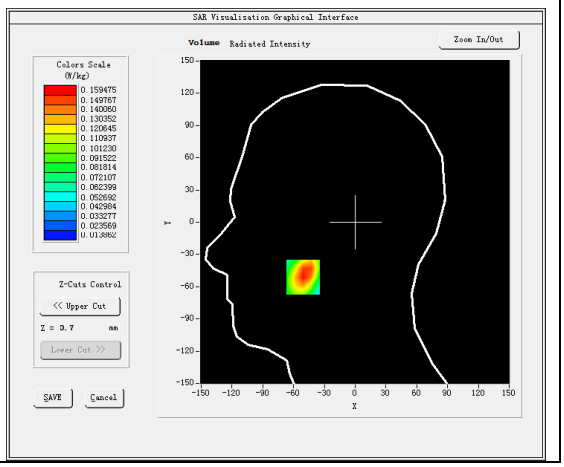
Date of measurement: 24/10/2023

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	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.63

B. SAR Measurement Results

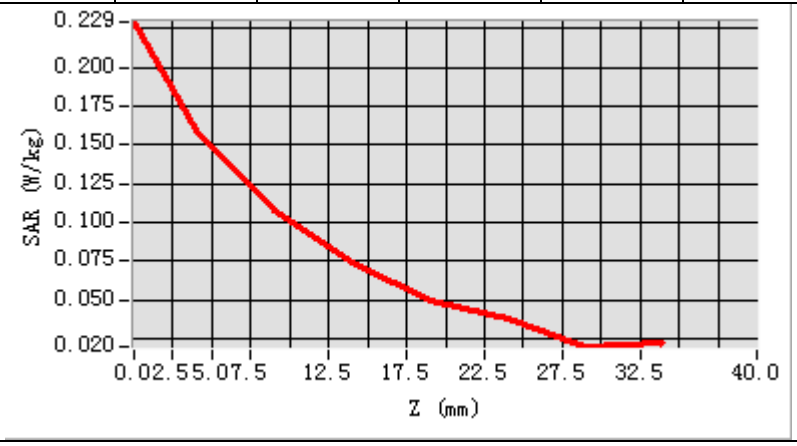
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	2.980000

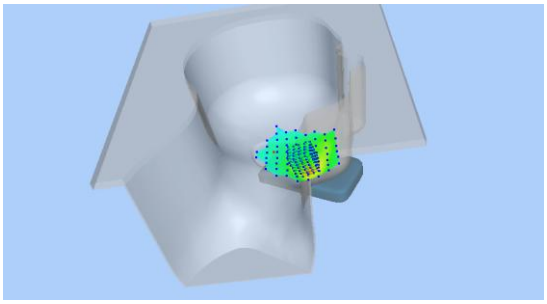
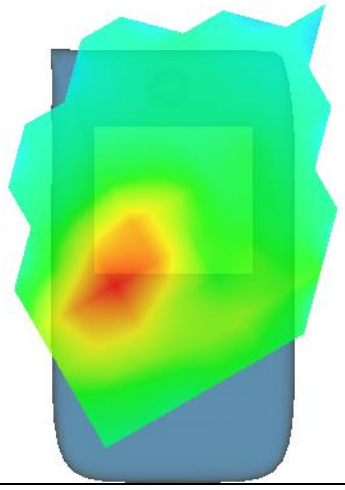
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.094327
SAR 1g (W/Kg)	0.156611

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2290	0.1595	0.1073	0.0740	0.0502	0.0378	0.0202



3D screen shot	Hot spot position
	

MEASUREMENT 6

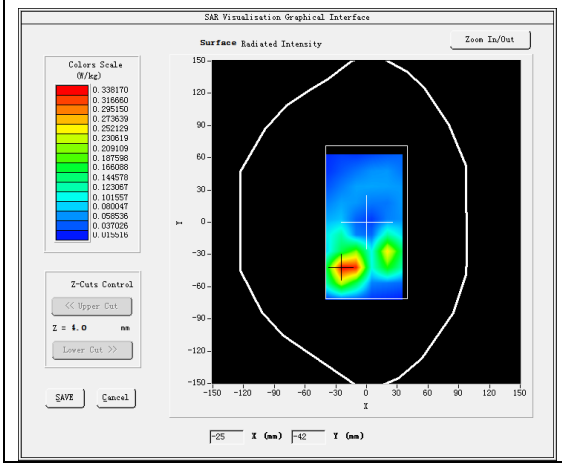
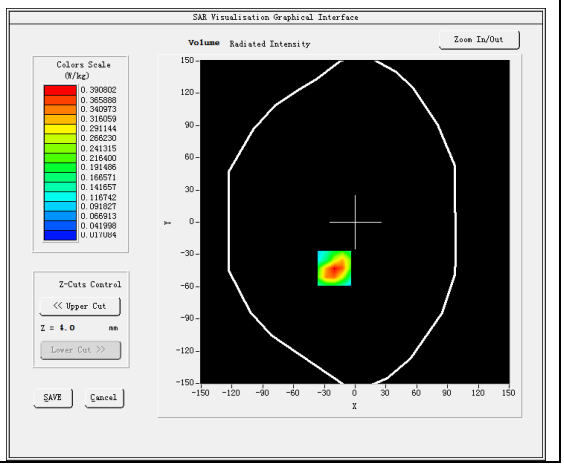
Date of measurement: 24/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.63

B. SAR Measurement Results

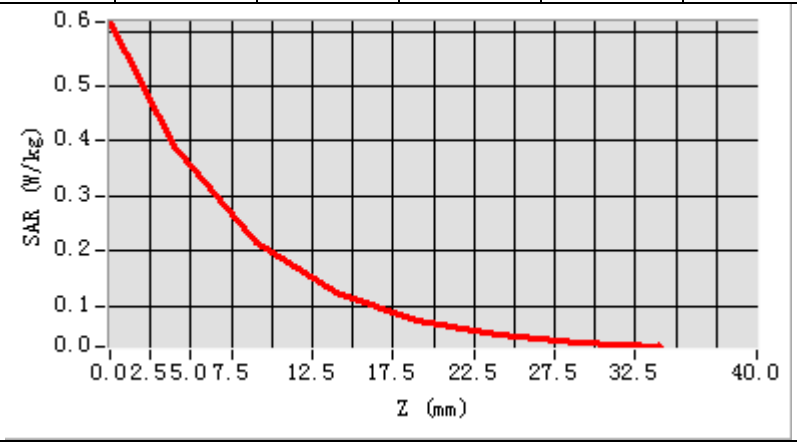
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	4.260000

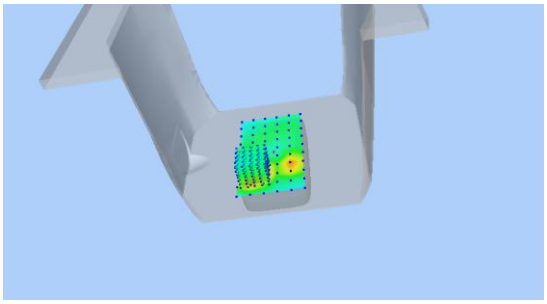
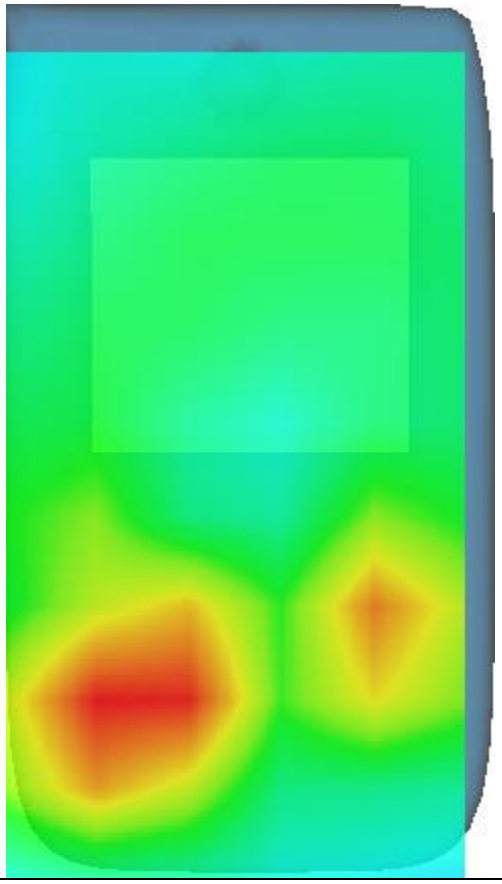
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-20.00, Y=-43.00
SAR Peak: 0.63 W/kg

SAR 10g (W/Kg)	0.196139
SAR 1g (W/Kg)	0.381427

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6175	0.3908	0.2157	0.1246	0.0741	0.0477	0.0330



3D screen shot	Hot spot position
	

MEASUREMENT 7

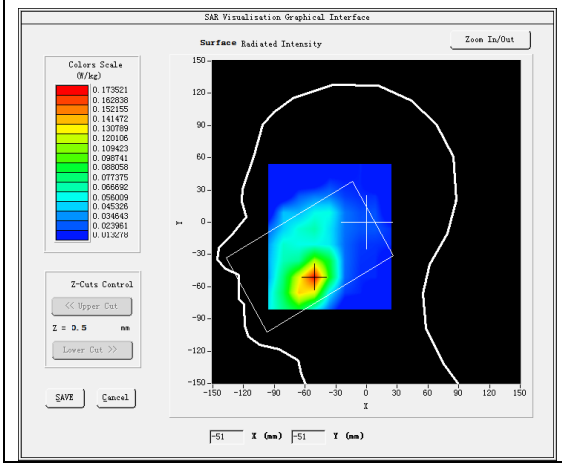
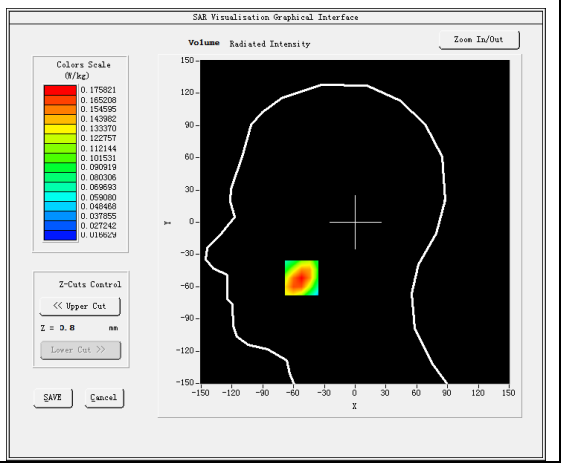
Date of measurement: 31/10/2023

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	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.45

B. SAR Measurement Results

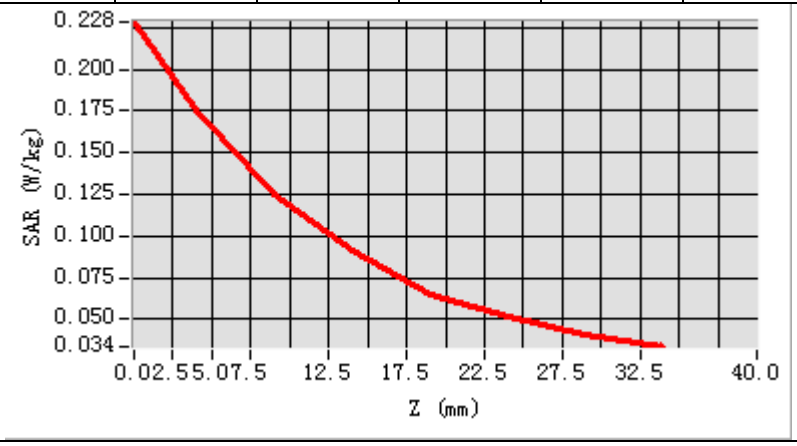
Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.515720
Relative permittivity (imaginary part)	14.270945
Conductivity (S/m)	1.373182
Variation (%)	1.520000

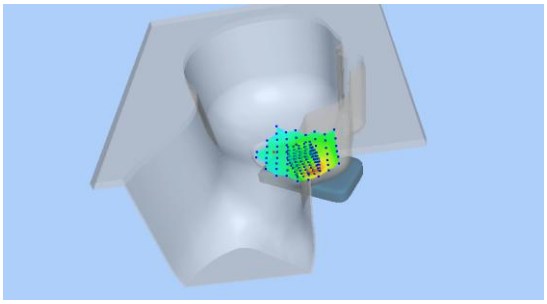
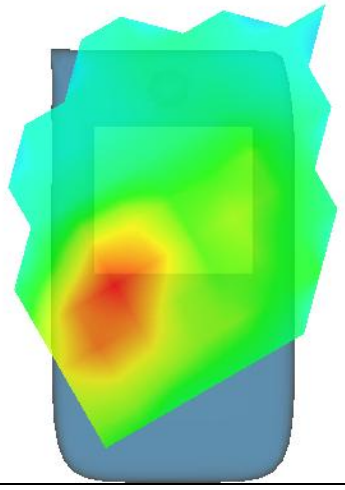
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-52.00, Y=-52.00
SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.109485
SAR 1g (W/Kg)	0.168730

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2285	0.1758	0.1254	0.0908	0.0653	0.0513	0.0405



3D screen shot	Hot spot position
	

MEASUREMENT 8

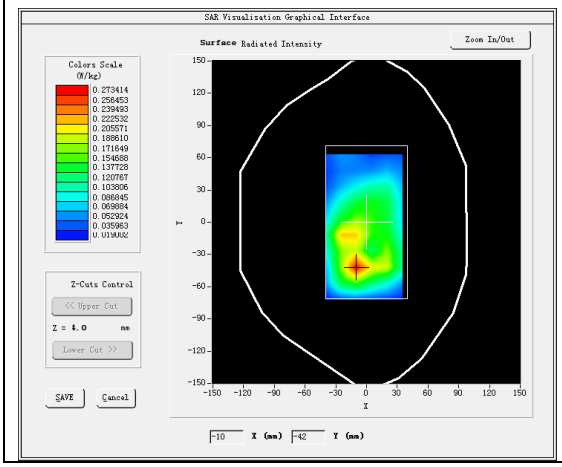
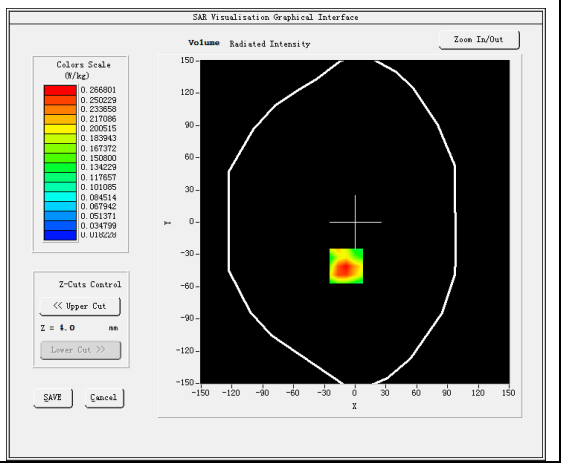
Date of measurement: 31/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.45

B. SAR Measurement Results

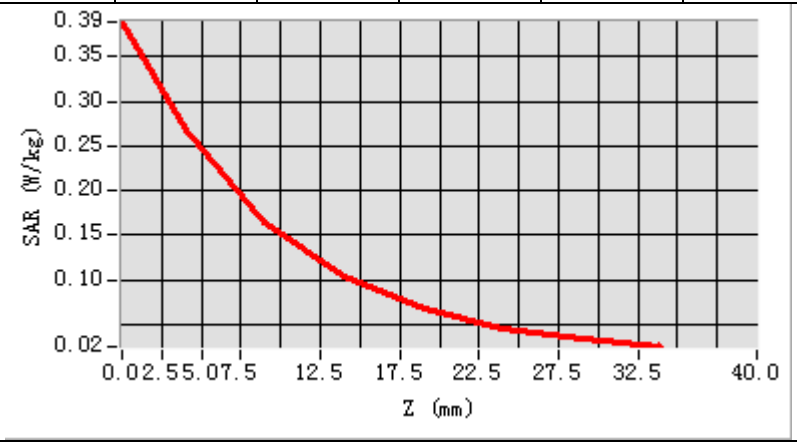
Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.515720
Relative permittivity (imaginary part)	14.270945
Conductivity (S/m)	1.373182
Variation (%)	0.000000

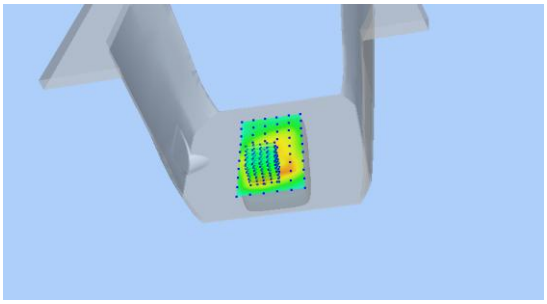
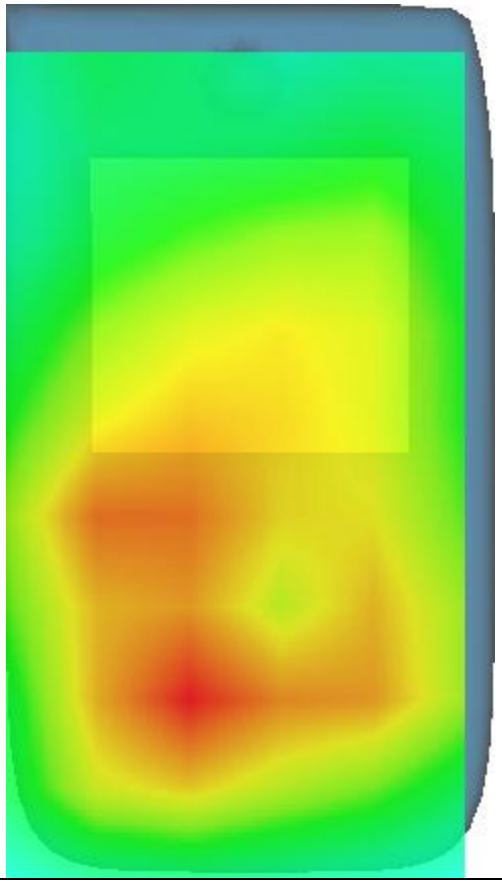
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-41.00
SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.147048
SAR 1g (W/Kg)	0.261111

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3890	0.2668	0.1641	0.1036	0.0667	0.0454	0.0337



3D screen shot	Hot spot position
	

MEASUREMENT 9

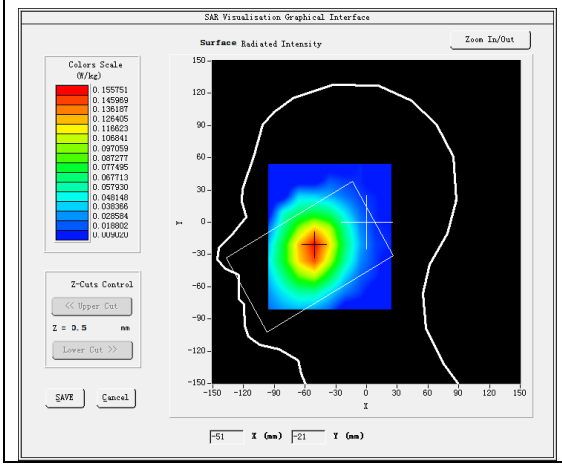
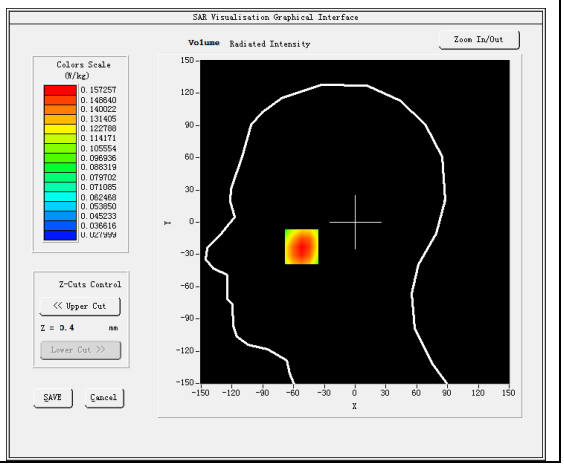
Date of measurement: 23/10/2023

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	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

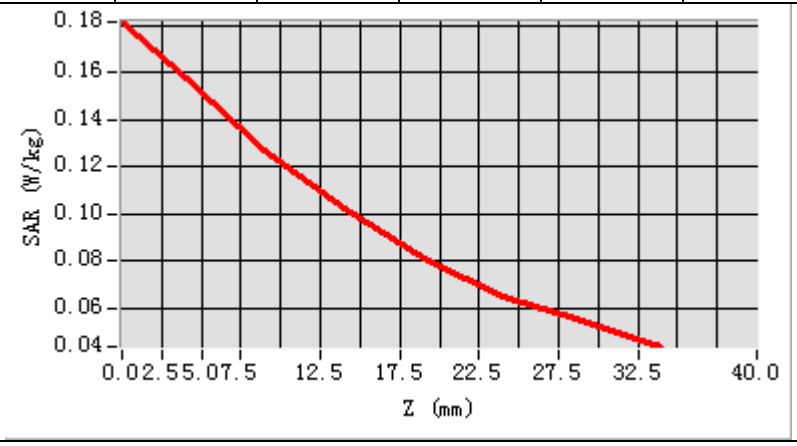
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.562119
Relative permittivity (imaginary part)	19.428495
Conductivity (S/m)	0.902777
Variation (%)	1.470000

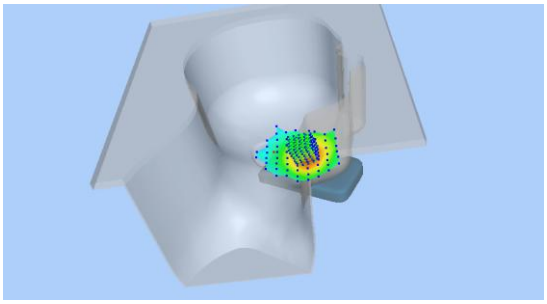
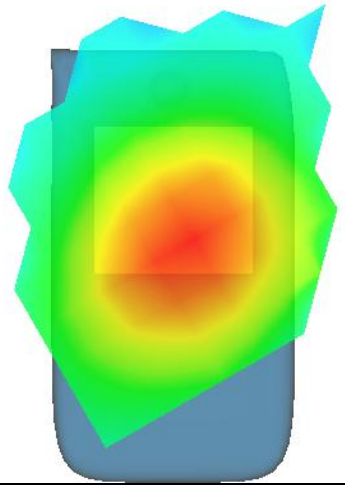
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-52.00, Y=-23.00
SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	0.113941
SAR 1g (W/Kg)	0.150961

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1815	0.1573	0.1270	0.1024	0.0810	0.0646	0.0544



3D screen shot	Hot spot position
	

MEASUREMENT 10

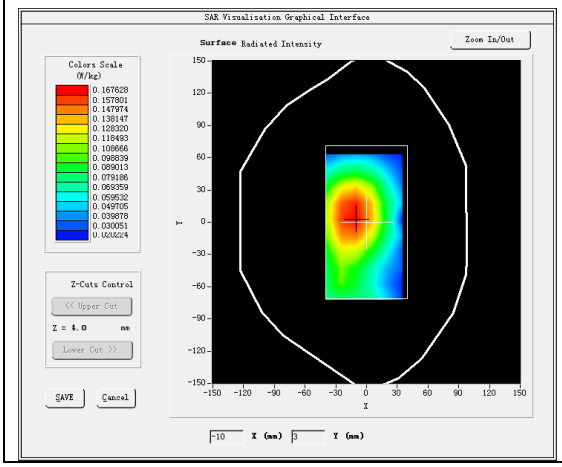
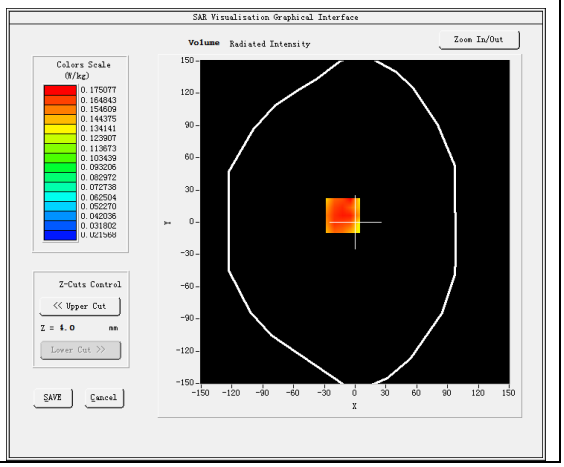
Date of measurement: 23/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

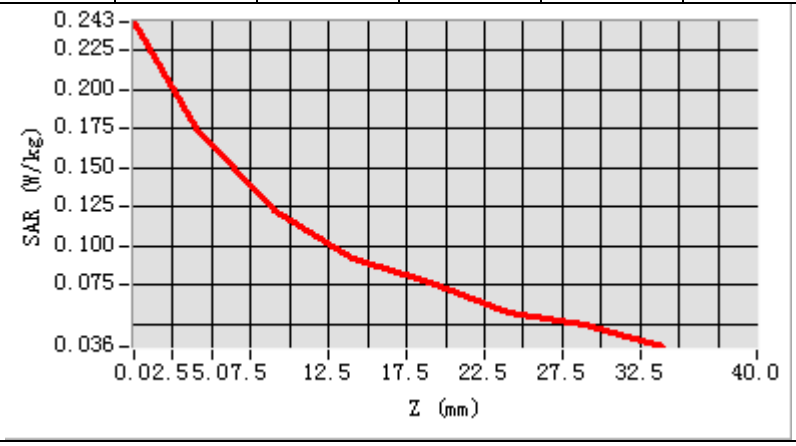
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.562119
Relative permittivity (imaginary part)	19.428495
Conductivity (S/m)	0.902777
Variation (%)	0.260000

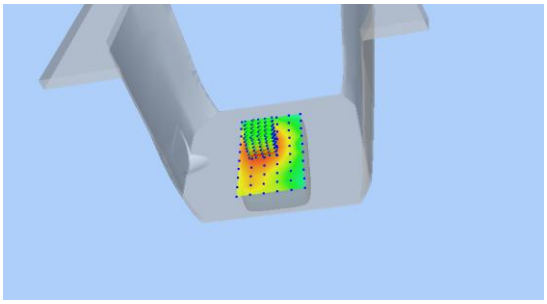
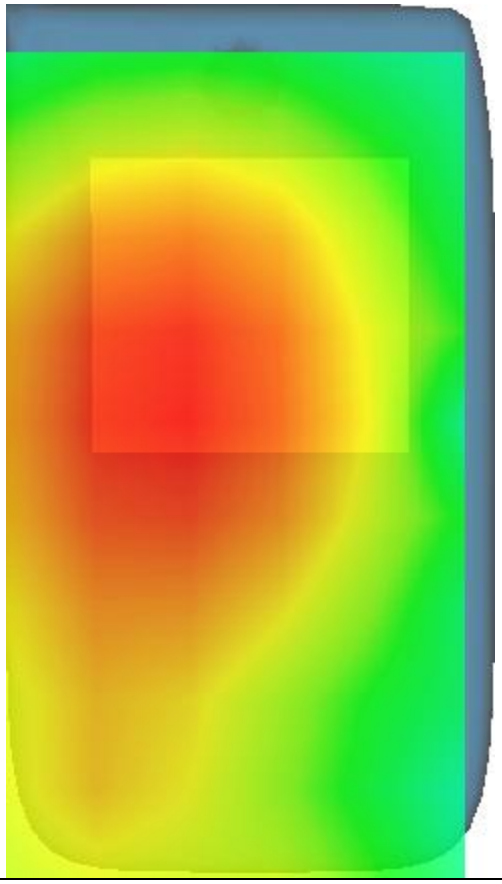
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-12.00, Y=6.00
SAR Peak: 0.25 W/kg

SAR 10g (W/Kg)	0.124523
SAR 1g (W/Kg)	0.164224

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2433	0.1751	0.1221	0.0922	0.0768	0.0574	0.0492



3D screen shot	Hot spot position
	

MEASUREMENT 11

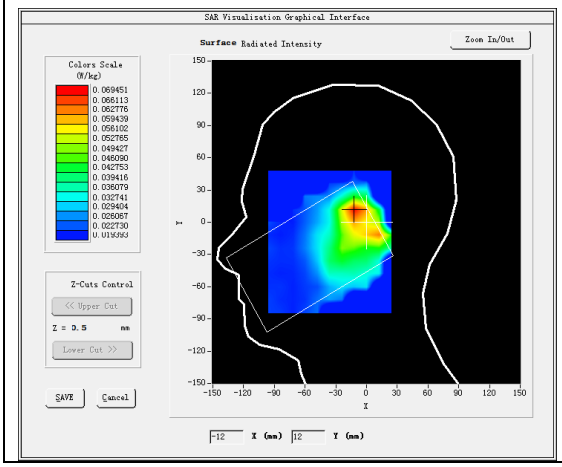
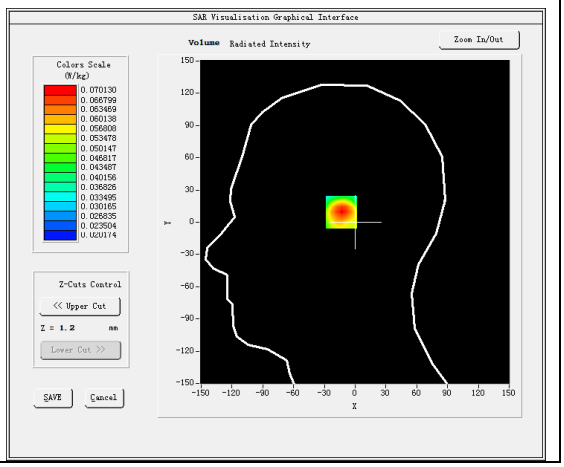
Date of measurement: 28/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

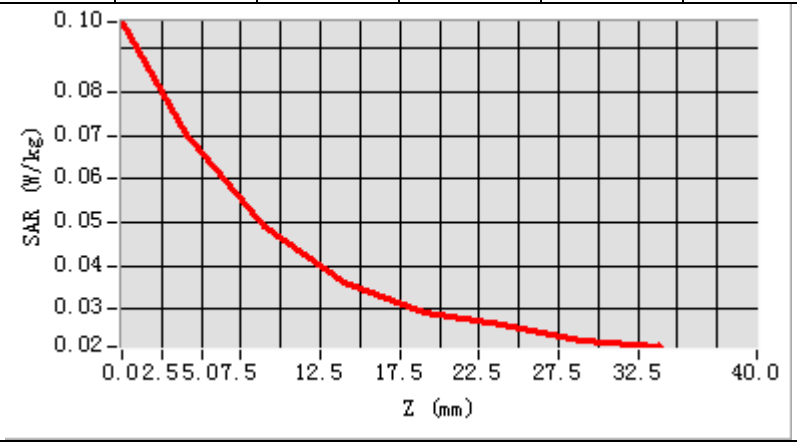
Frequency (MHz)	2437.000000
Relative permittivity (real part)	38.780731
Relative permittivity (imaginary part)	13.134110
Conductivity (S/m)	1.778213
Variation (%)	-1.090000

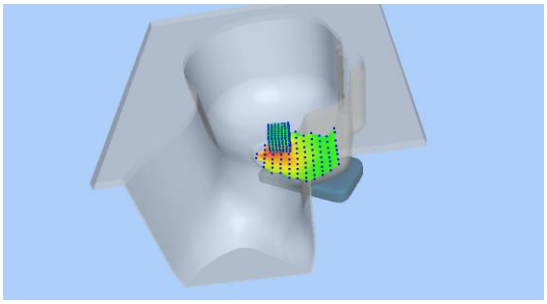
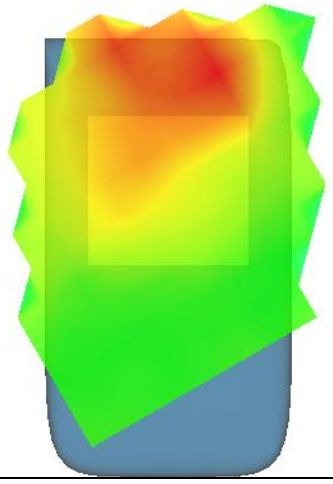
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=10.00
SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.045101
SAR 1g (W/Kg)	0.066926

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.0961	0.0701	0.0491	0.0362	0.0291	0.0264	0.0230



3D screen shot	Hot spot position
	

MEASUREMENT 12

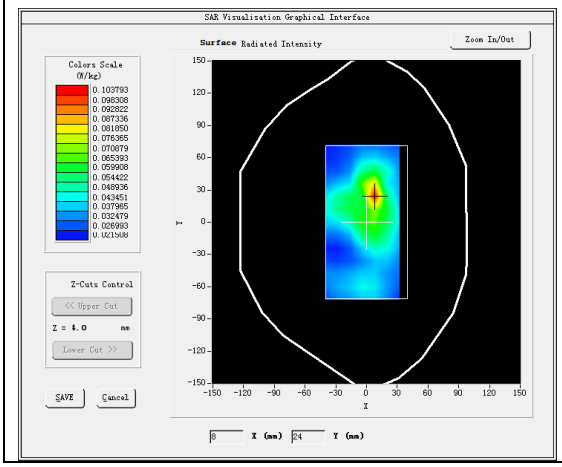
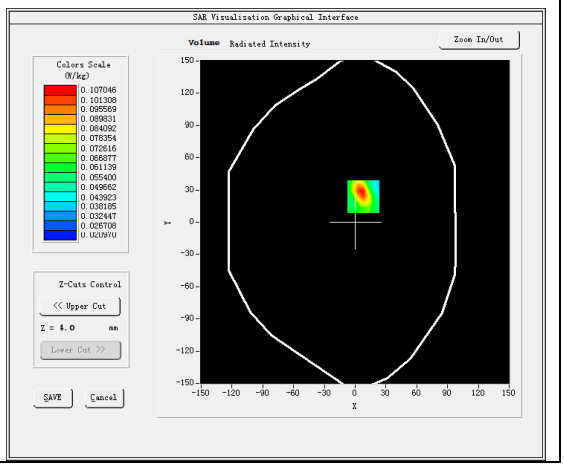
Date of measurement: 28/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

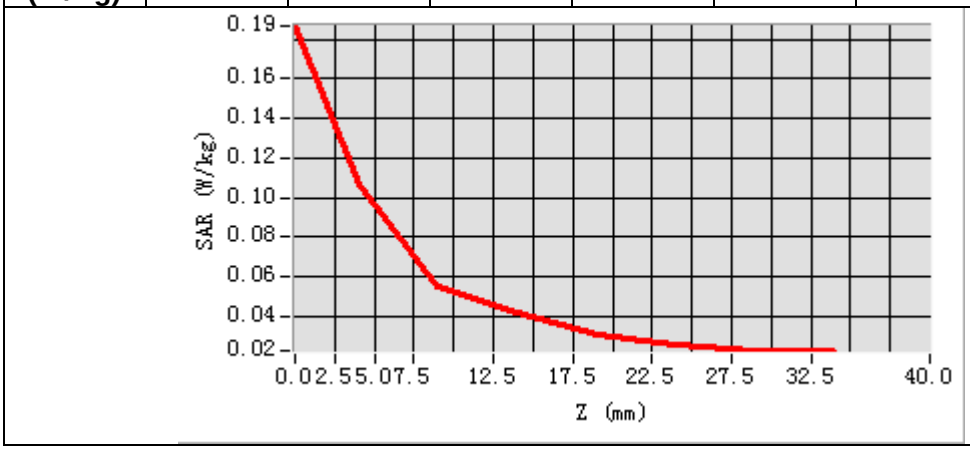
Frequency (MHz)	2437.000000
Relative permittivity (real part)	38.780731
Relative permittivity (imaginary part)	13.134110
Conductivity (S/m)	1.778213
Variation (%)	3.410000

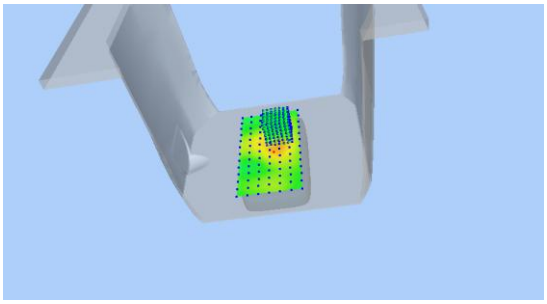
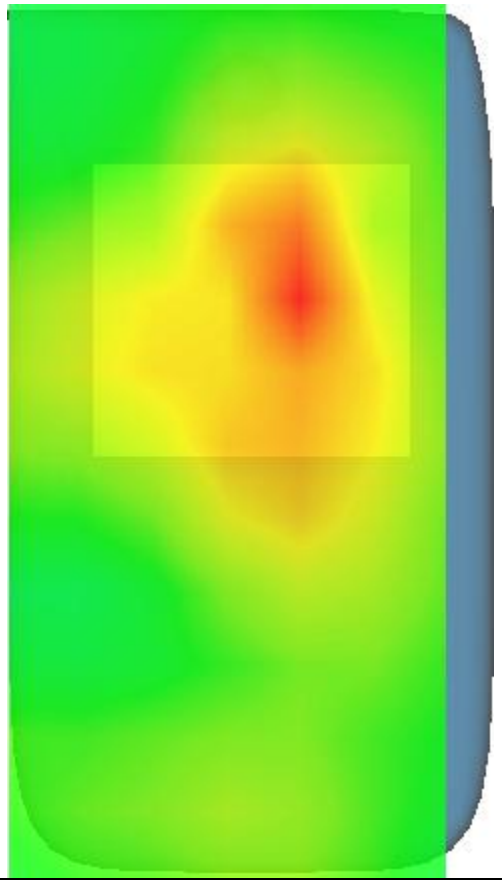
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=24.00
SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.055483
SAR 1g (W/Kg)	0.098787

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1867	0.1070	0.0549	0.0416	0.0304	0.0260	0.0228



3D screen shot	Hot spot position
	

MEASUREMENT 13

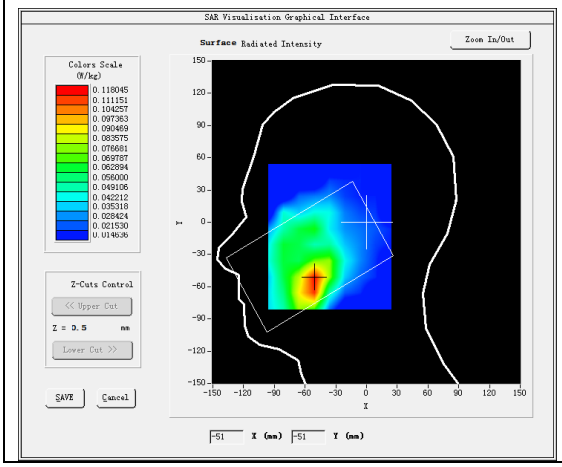
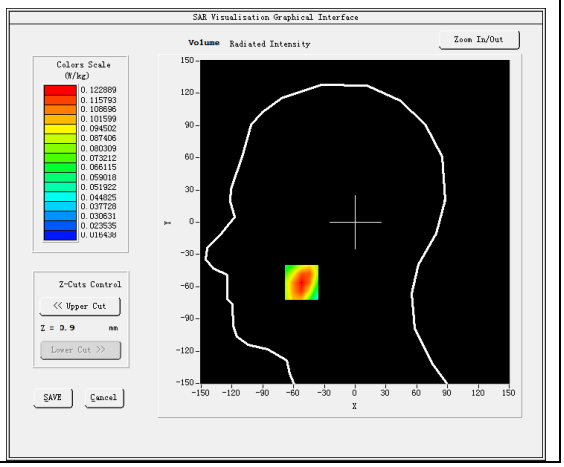
Date of measurement: 24/10/2023

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	LTE band 2
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.63

B. SAR Measurement Results

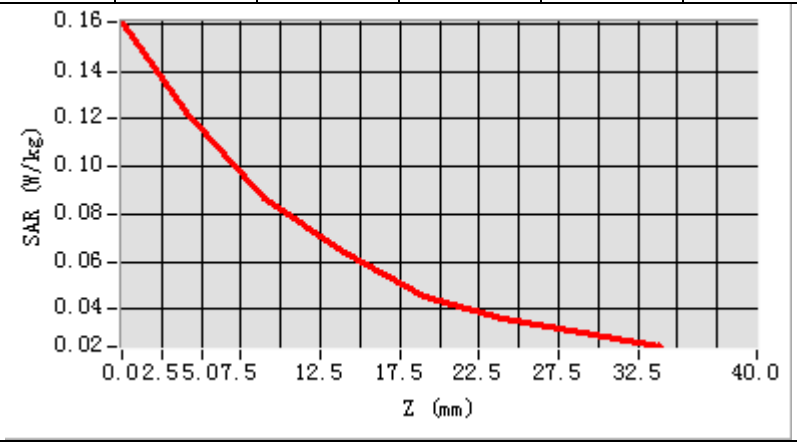
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	4.100000

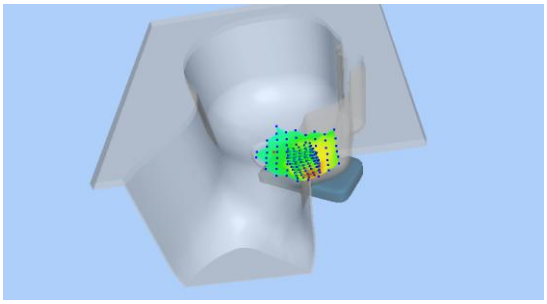
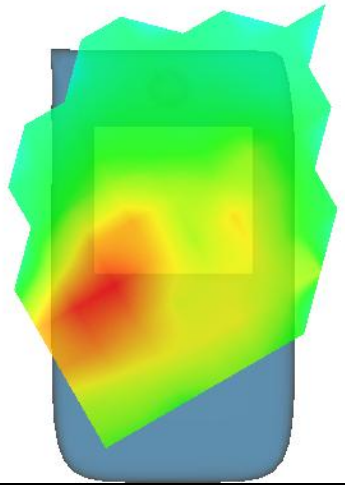
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-56.00
SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.078260
SAR 1g (W/Kg)	0.118785

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1607	0.1229	0.0863	0.0640	0.0453	0.0364	0.0298



3D screen shot	Hot spot position
	

MEASUREMENT 14

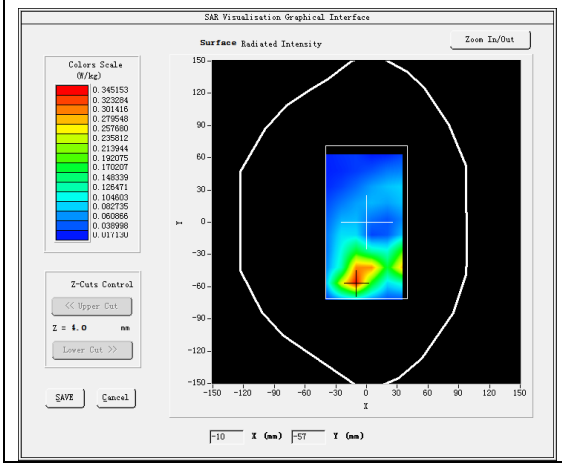
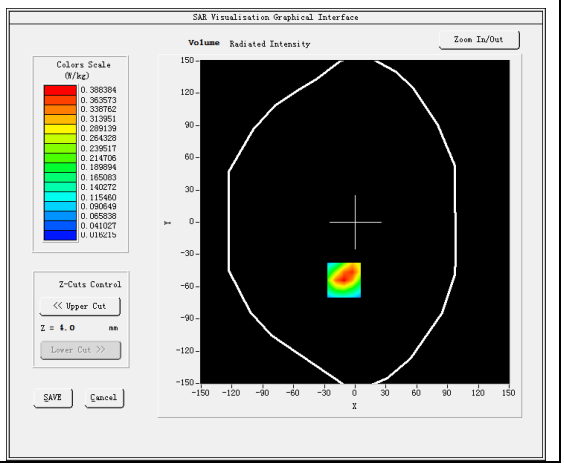
Date of measurement: 24/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

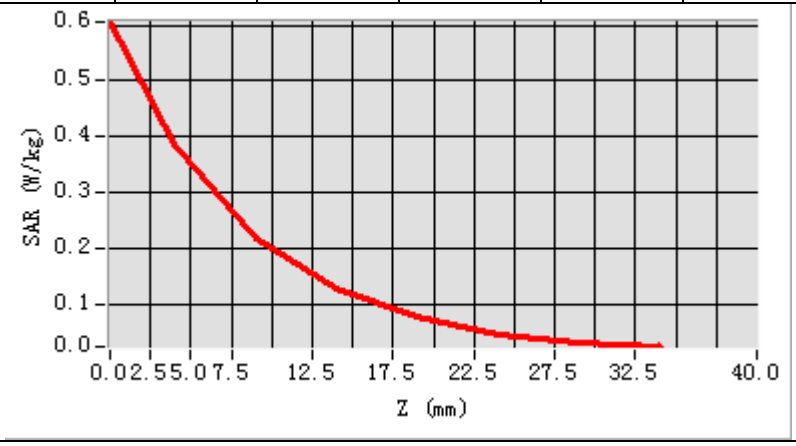
Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.098179
Relative permittivity (imaginary part)	13.676342
Conductivity (S/m)	1.428418
Variation (%)	-1.670000

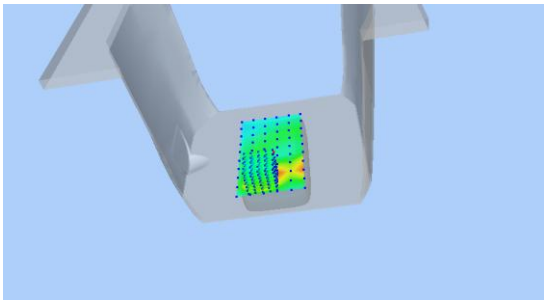
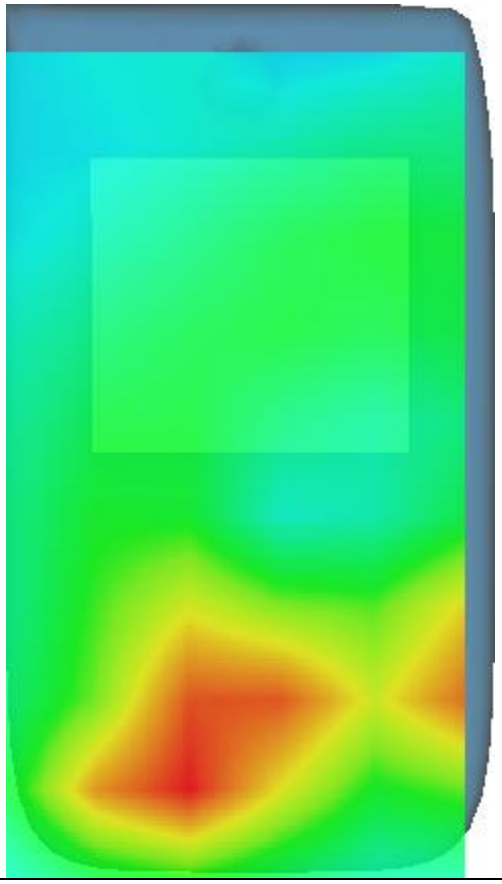
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-11.00, Y=-54.00
SAR Peak: 0.62 W/kg

SAR 10g (W/Kg)	0.202738
SAR 1g (W/Kg)	0.378093

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6056	0.3884	0.2194	0.1302	0.0785	0.0485	0.0328



3D screen shot	Hot spot position
	

MEASUREMENT 15

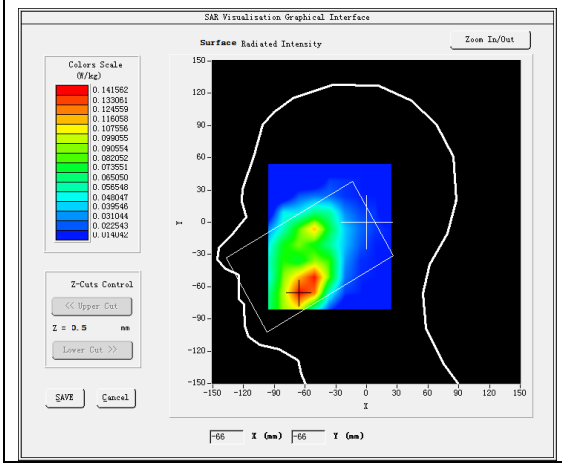
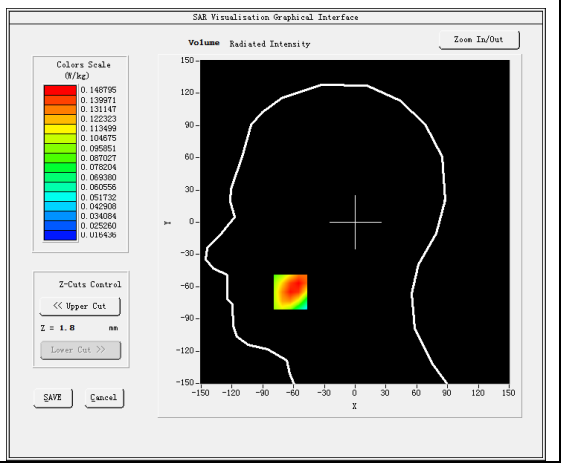
Date of measurement: 31/10/2023

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	LTE band 4
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.45

B. SAR Measurement Results

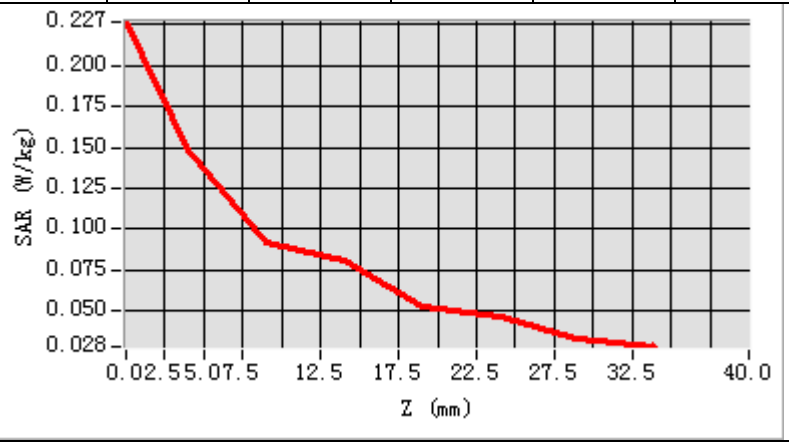
Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.080078
Relative permittivity (imaginary part)	13.474992
Conductivity (S/m)	1.296968
Variation (%)	3.120000

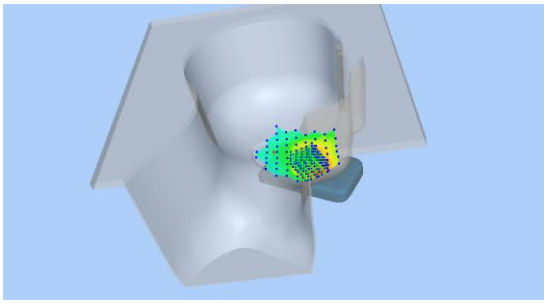
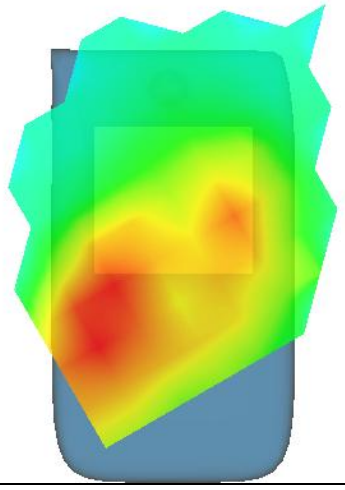
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-63.00, Y=-65.00
SAR Peak: 0.20 W/kg

SAR 10g (W/Kg)	0.097932
SAR 1g (W/Kg)	0.143707

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2268	0.1488	0.0916	0.0808	0.0523	0.0471	0.0336



3D screen shot	Hot spot position
	

MEASUREMENT 16

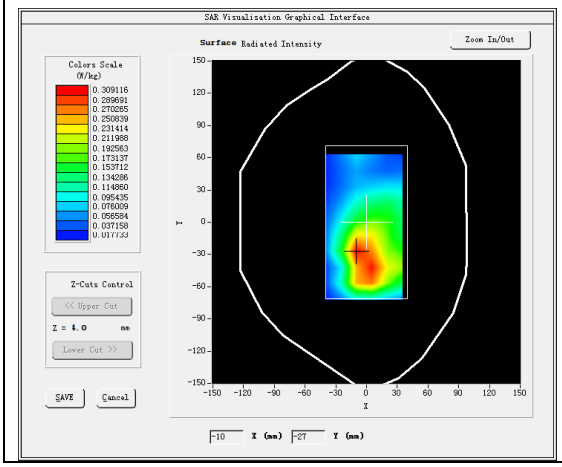
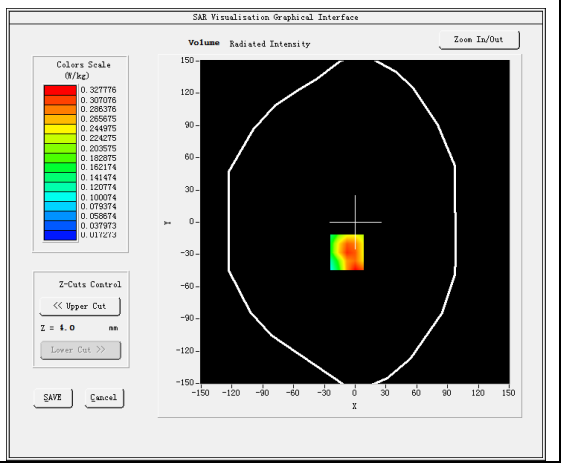
Date of measurement: 31/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

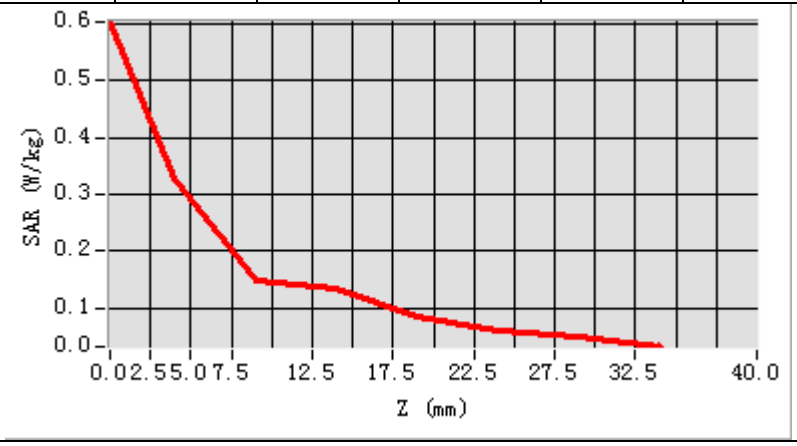
Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.080078
Relative permittivity (imaginary part)	13.474992
Conductivity (S/m)	1.296968
Variation (%)	-0.510000

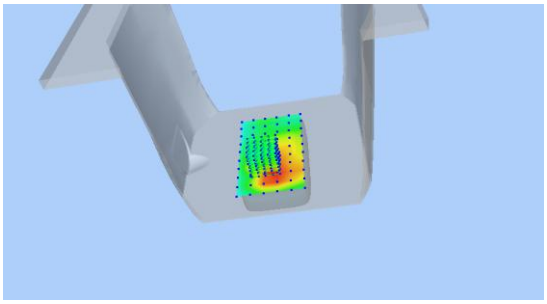
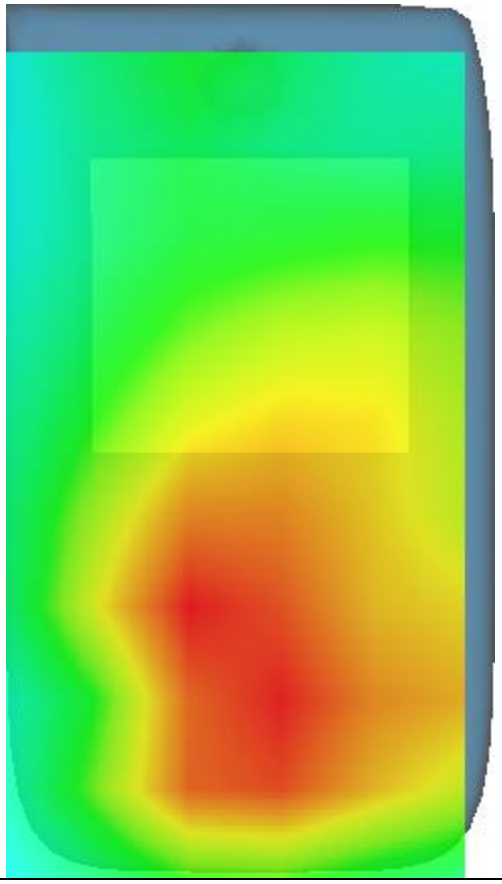
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-28.00
SAR Peak: 0.47 W/kg

SAR 10g (W/Kg)	0.198815
SAR 1g (W/Kg)	0.301158

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.6027	0.3278	0.1492	0.1326	0.0864	0.0587	0.0503



3D screen shot	Hot spot position
	

MEASUREMENT 17

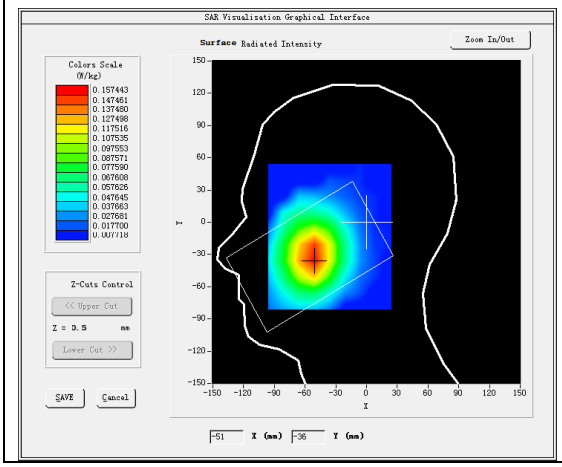
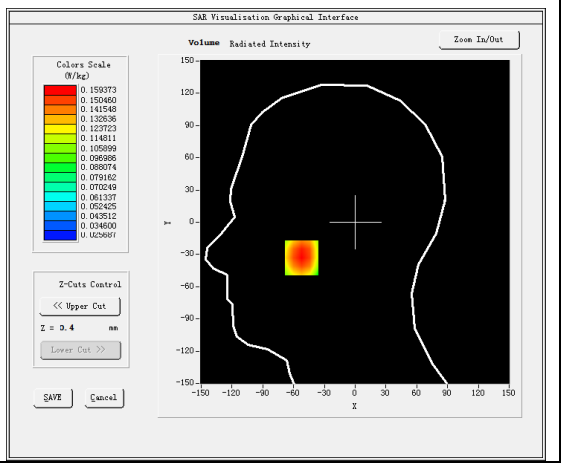
Date of measurement: 23/10/2023

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	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

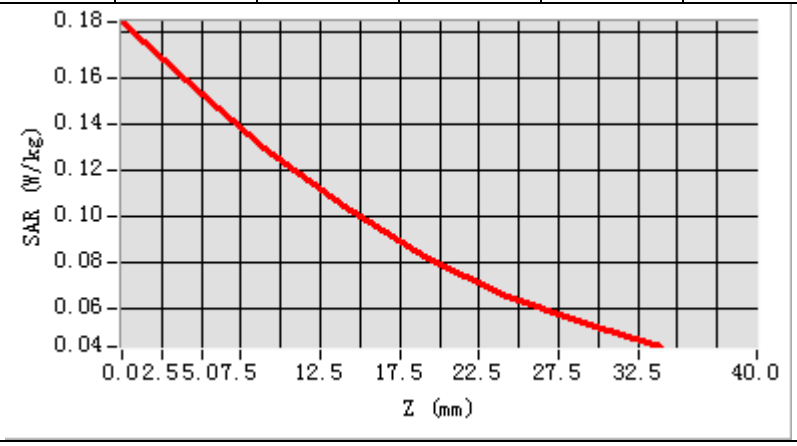
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.564388
Relative permittivity (imaginary part)	19.430296
Conductivity (S/m)	0.902969
Variation (%)	1.560000

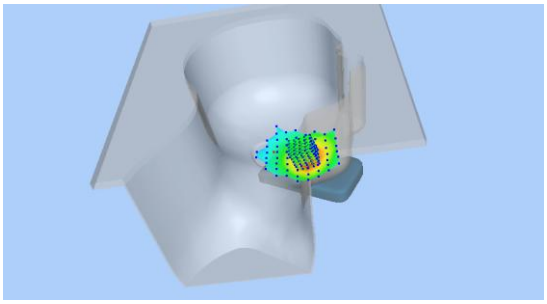
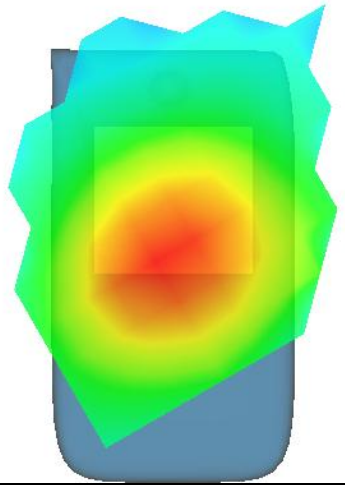
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-33.00
SAR Peak: 0.19 W/kg

SAR 10g (W/Kg)	0.116186
SAR 1g (W/Kg)	0.153448

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1840	0.1594	0.1296	0.1043	0.0830	0.0663	0.0547



3D screen shot	Hot spot position
	

MEASUREMENT 18

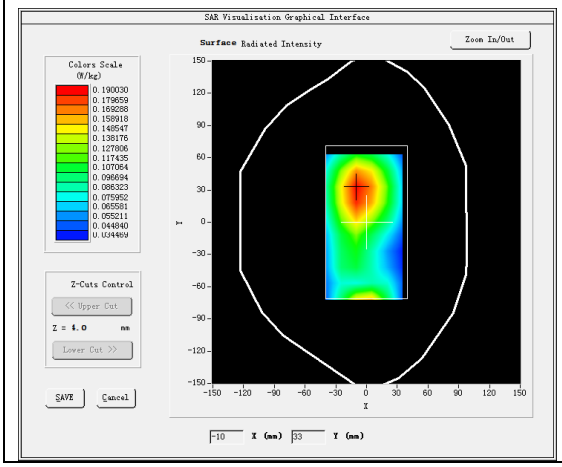
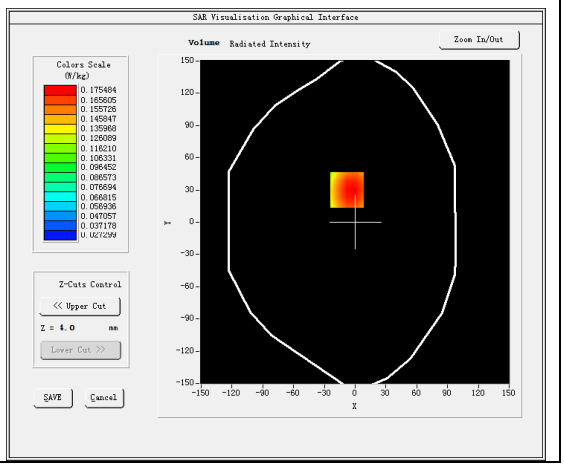
Date of measurement: 23/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

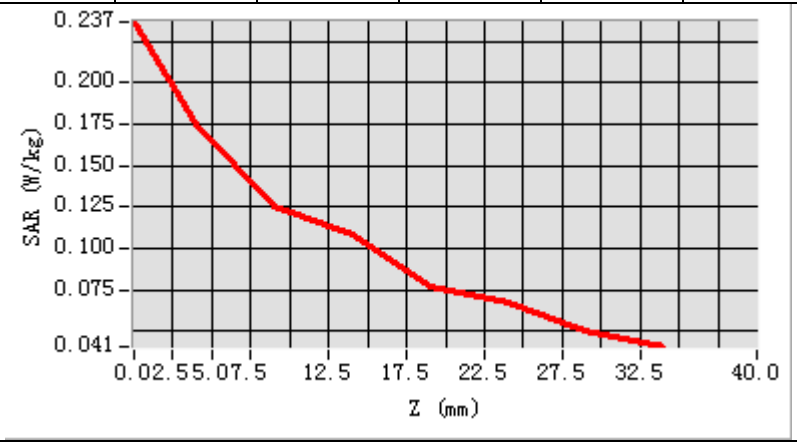
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.564388
Relative permittivity (imaginary part)	19.430296
Conductivity (S/m)	0.902969
Variation (%)	-4.690000

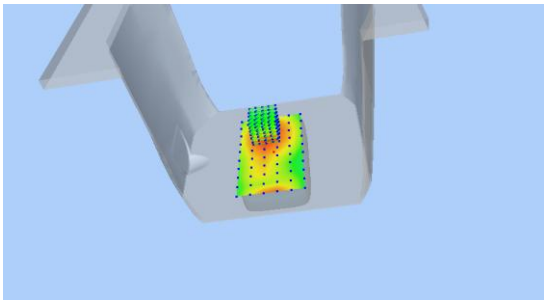
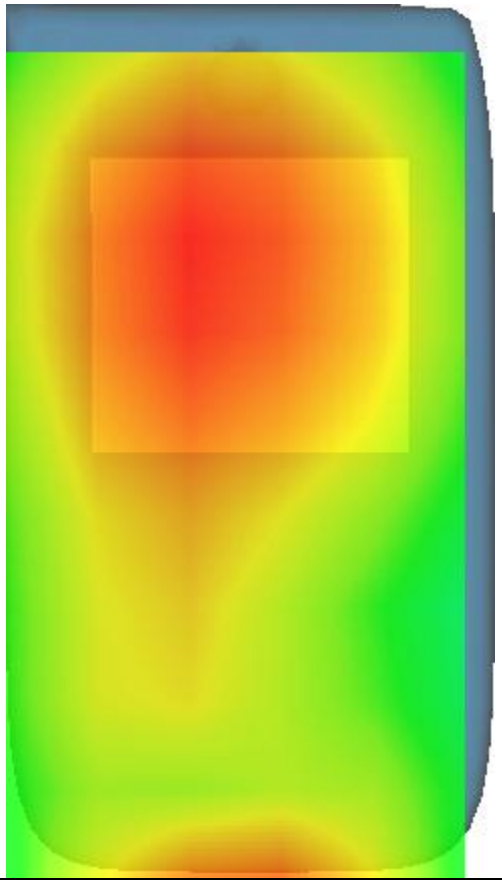
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=30.00
SAR Peak: 0.21 W/kg

SAR 10g (W/Kg)	0.128716
SAR 1g (W/Kg)	0.170874

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2369	0.1755	0.1253	0.1080	0.0775	0.0671	0.0499



3D screen shot	Hot spot position
	

MEASUREMENT 19

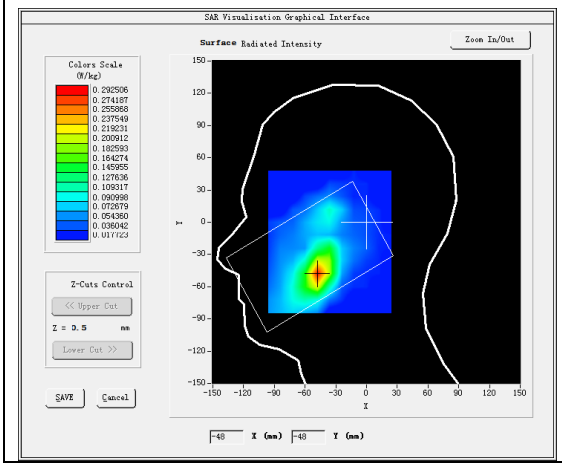
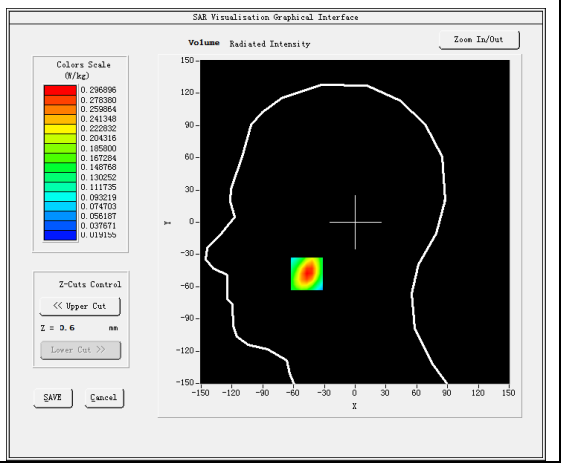
Date of measurement: 29/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

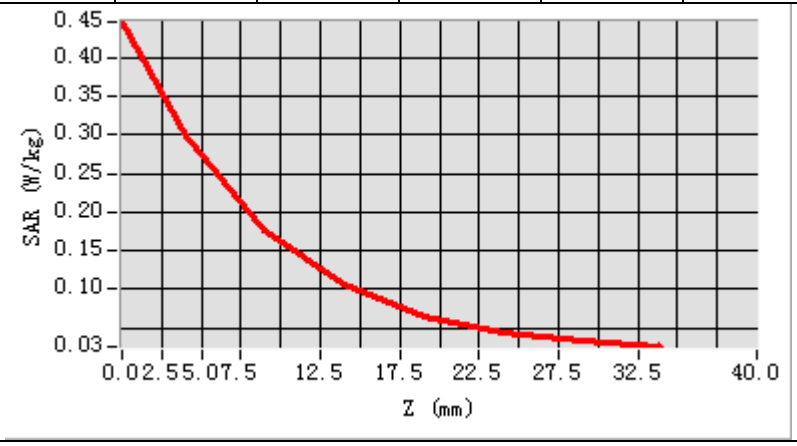
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.909370
Relative permittivity (imaginary part)	13.105514
Conductivity (S/m)	1.845693
Variation (%)	3.700000

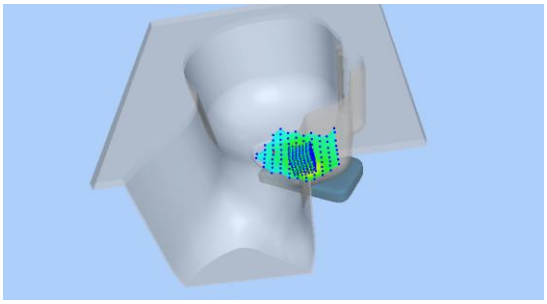
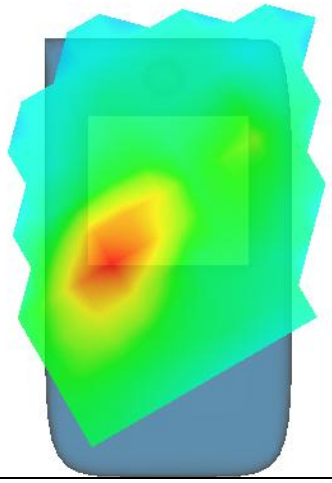
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-47.00, Y=-48.00
SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.147252
SAR 1g (W/Kg)	0.275779

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4461	0.2969	0.1748	0.1049	0.0655	0.0435	0.0330



3D screen shot	Hot spot position
	

MEASUREMENT 20

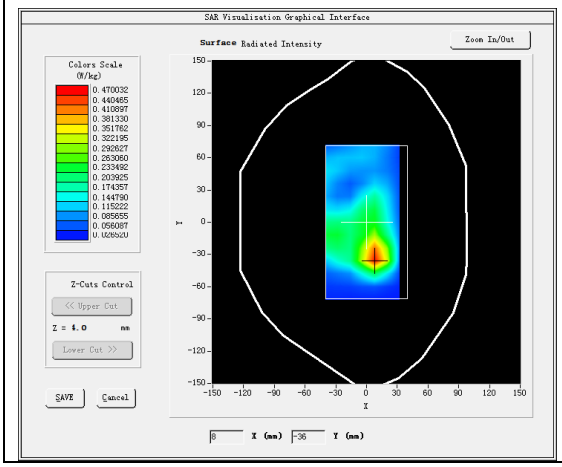
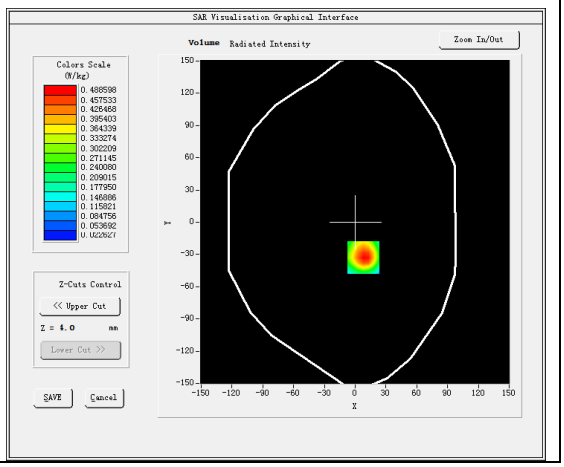
Date of measurement: 29/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

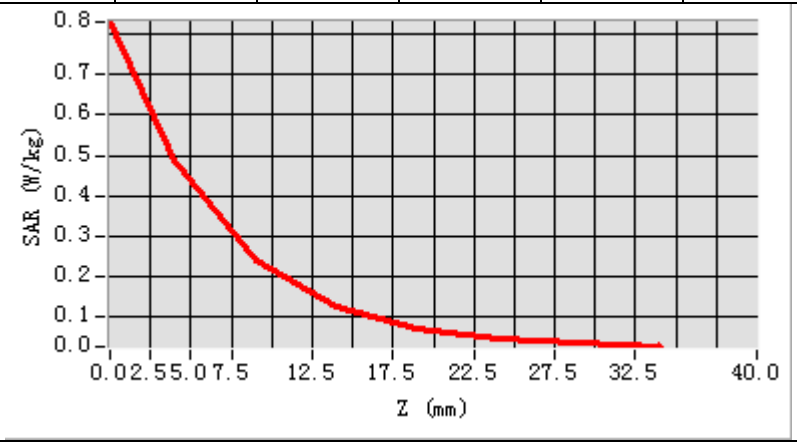
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.909370
Relative permittivity (imaginary part)	13.105514
Conductivity (S/m)	1.845693
Variation (%)	0.830000

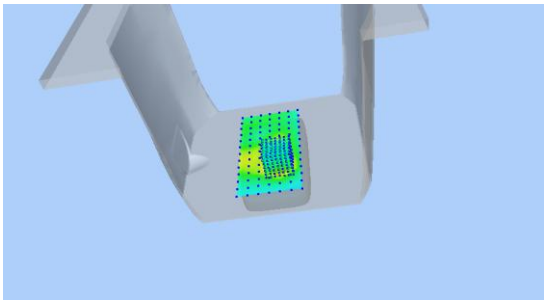
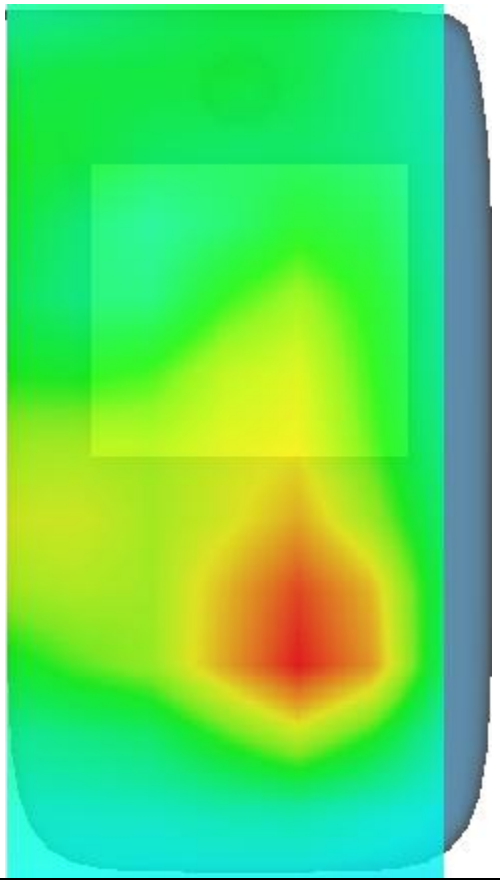
SURFACE SAR	VOLUME SAR
	

Maximum location: X=8.00, Y=-33.00
SAR Peak: 0.82 W/kg

SAR 10g (W/Kg)	0.235780
SAR 1g (W/Kg)	0.464073

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.8306	0.4886	0.2410	0.1265	0.0726	0.0466	0.0335



3D screen shot	Hot spot position
	

MEASUREMENT 21

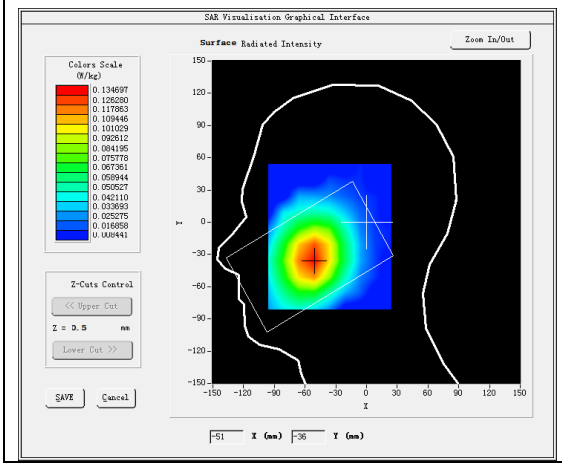
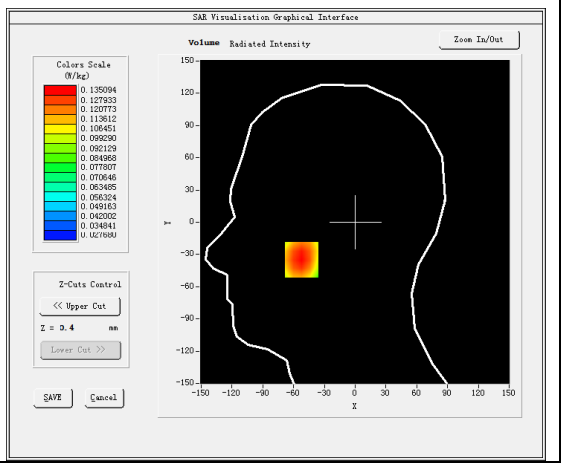
Date of measurement: 26/10/2023

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	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.37

B. SAR Measurement Results

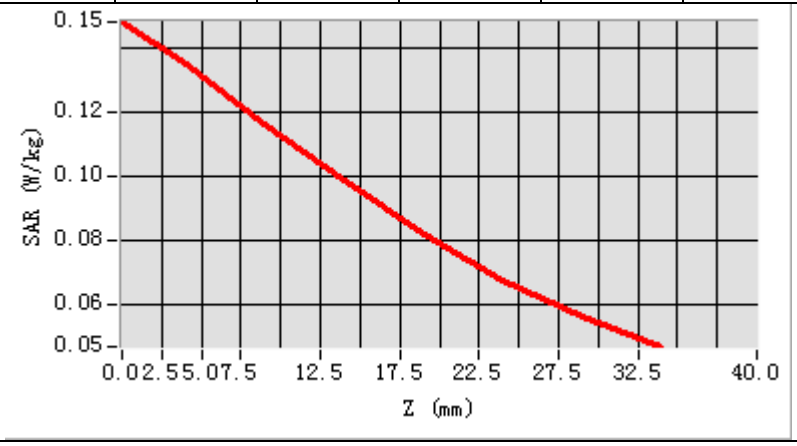
Frequency (MHz)	707.500000
Relative permittivity (real part)	42.839897
Relative permittivity (imaginary part)	22.038427
Conductivity (S/m)	0.866233
Variation (%)	2.690000

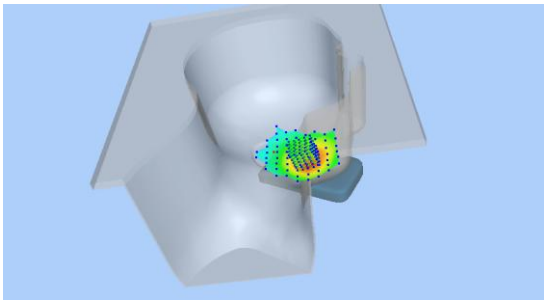
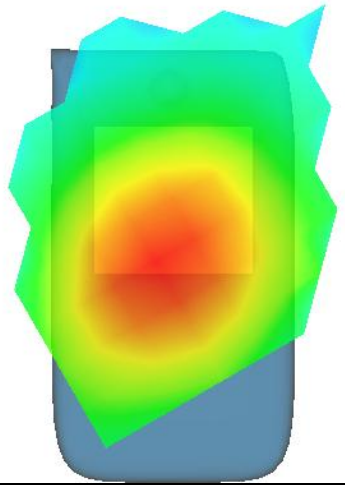
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-35.00
SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.105547
SAR 1g (W/Kg)	0.130958

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1483	0.1351	0.1165	0.0986	0.0818	0.0675	0.0564



3D screen shot	Hot spot position
	

MEASUREMENT 22

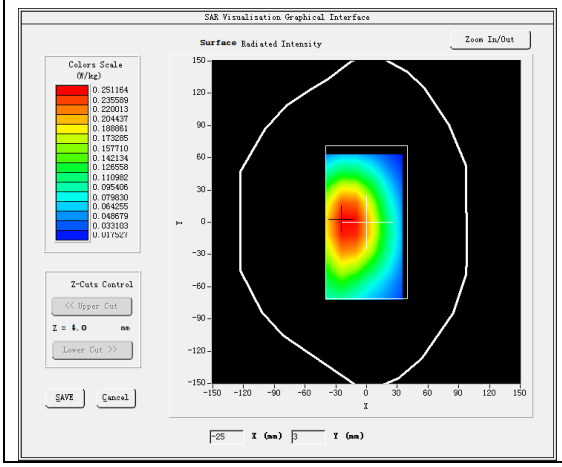
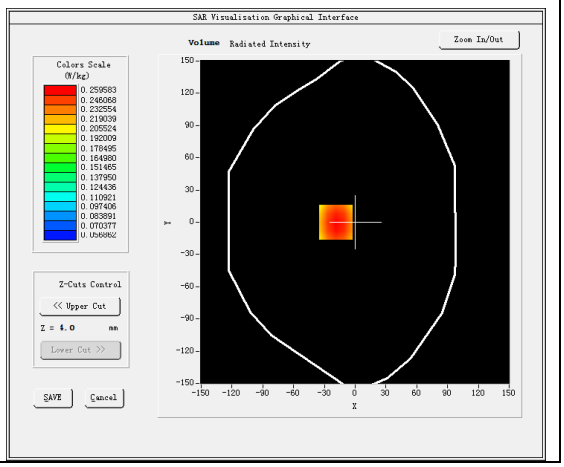
Date of measurement: 26/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

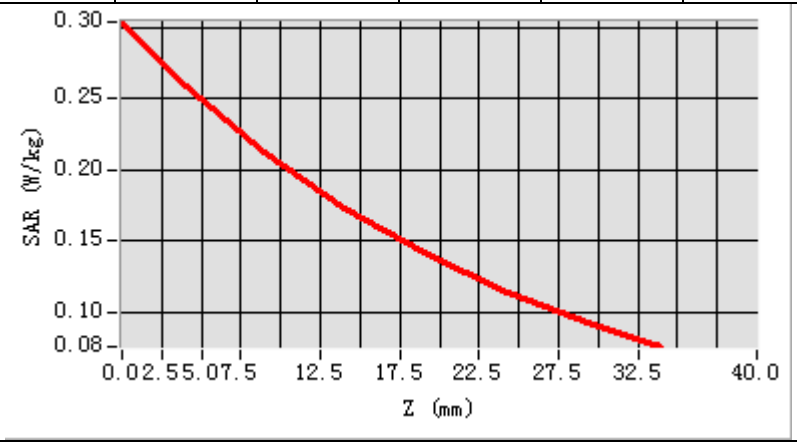
Frequency (MHz)	707.500000
Relative permittivity (real part)	42.839897
Relative permittivity (imaginary part)	22.038427
Conductivity (S/m)	0.866233
Variation (%)	-0.310000

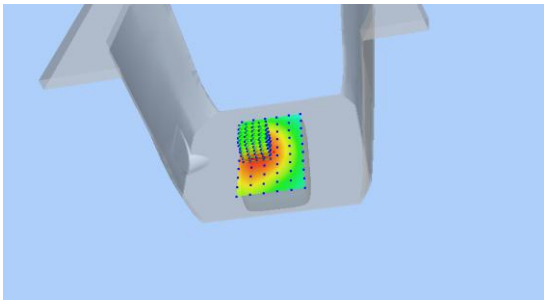
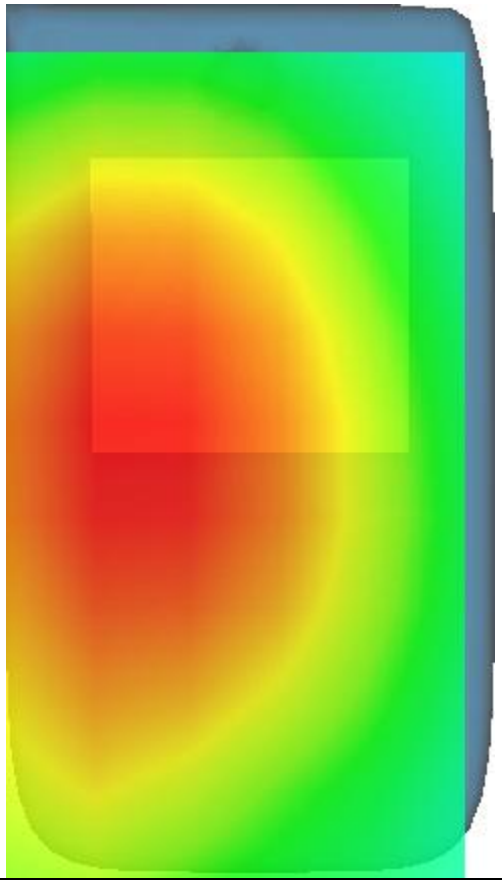
SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-19.00, Y=0.00
SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.197464
SAR 1g (W/Kg)	0.252706

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3041	0.2596	0.2124	0.1736	0.1415	0.1148	0.0935



3D screen shot	Hot spot position
	

MEASUREMENT 23

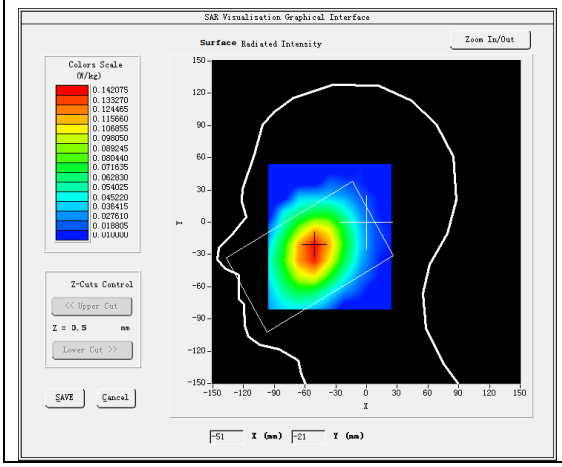
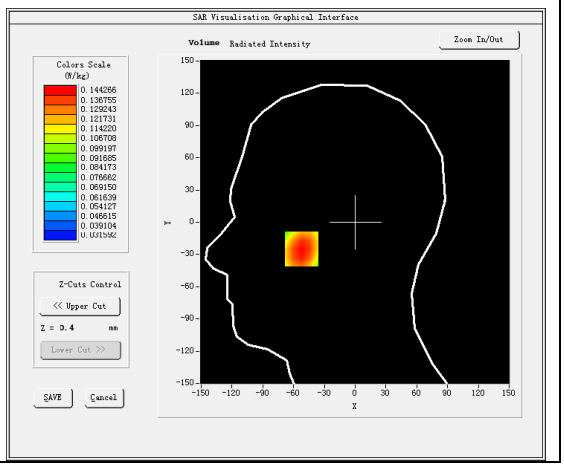
Date of measurement: 26/10/2023

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	LTE band 17
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.37

B. SAR Measurement Results

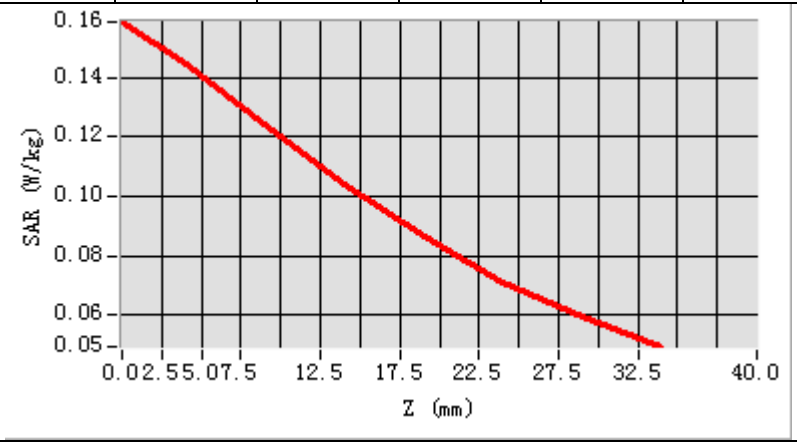
Frequency (MHz)	710.000000
Relative permittivity (real part)	42.818645
Relative permittivity (imaginary part)	22.066828
Conductivity (S/m)	0.870414
Variation (%)	-0.640000

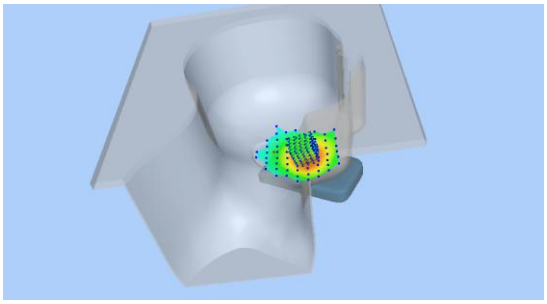
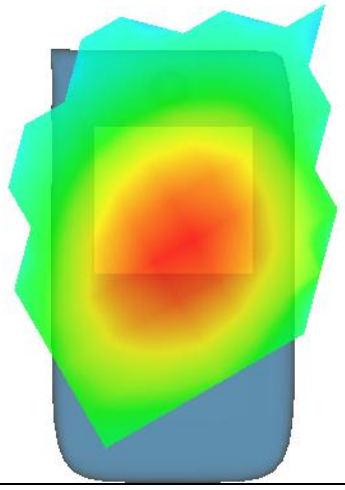
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-25.00
SAR Peak: 0.16 W/kg

SAR 10g (W/Kg)	0.111840
SAR 1g (W/Kg)	0.140298

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1587	0.1443	0.1242	0.1038	0.0861	0.0712	0.0592



3D screen shot	Hot spot position
	

MEASUREMENT 24

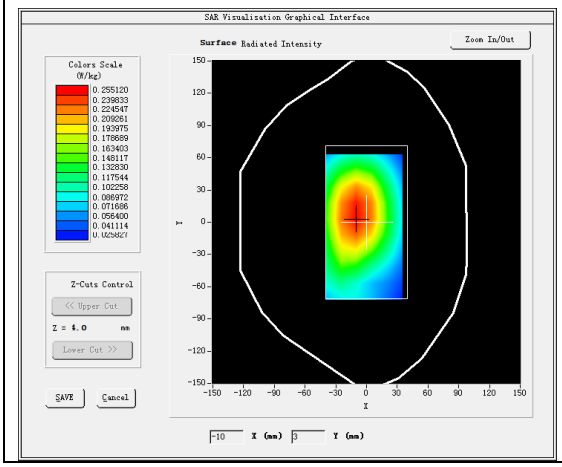
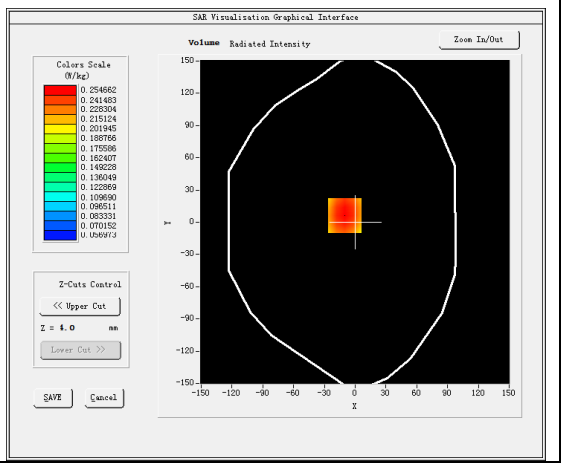
Date of measurement: 26/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

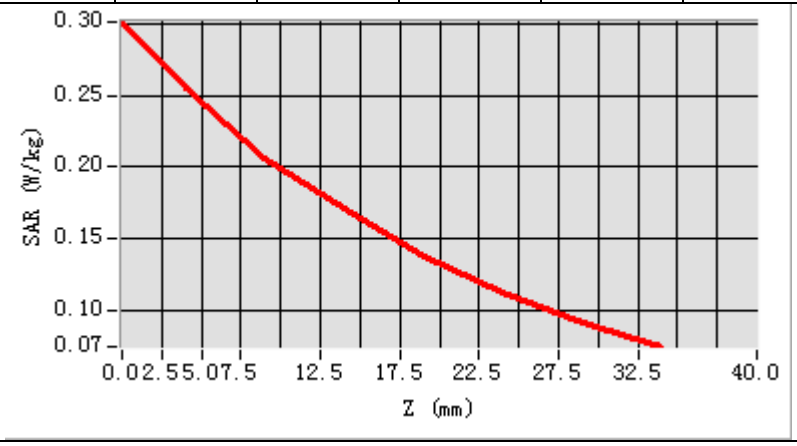
Frequency (MHz)	710.000000
Relative permittivity (real part)	42.818645
Relative permittivity (imaginary part)	22.066828
Conductivity (S/m)	0.870414
Variation (%)	-0.900000

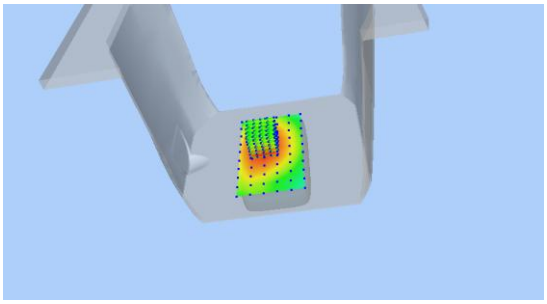
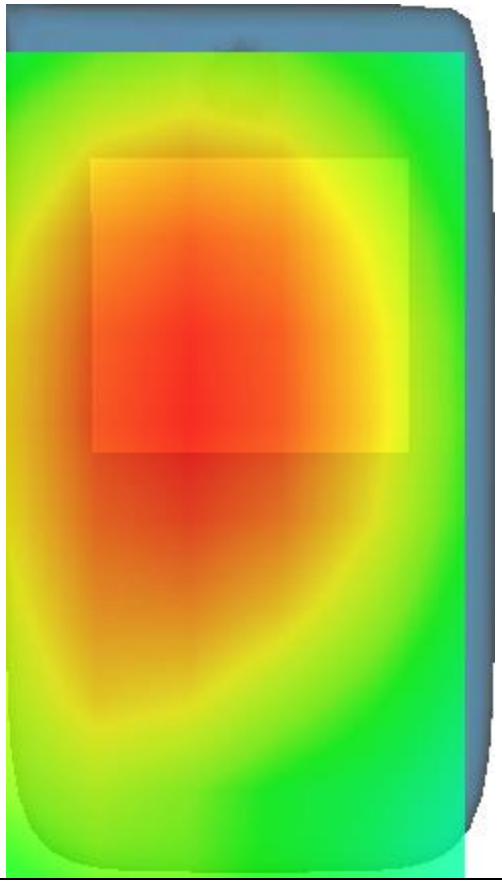
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=6.00
SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.193901
SAR 1g (W/Kg)	0.248401

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3012	0.2547	0.2066	0.1717	0.1377	0.1124	0.0913



3D screen shot	Hot spot position
	

MEASUREMENT 25

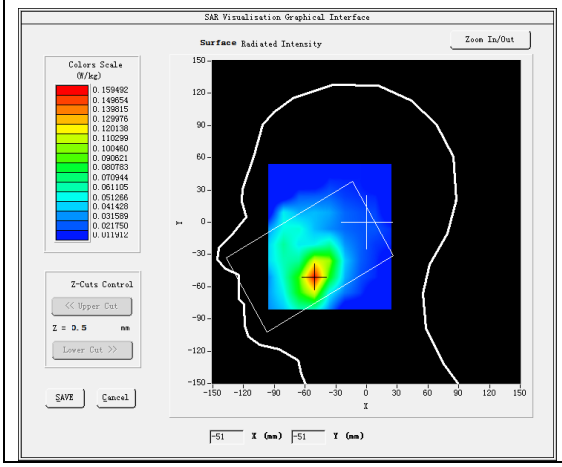
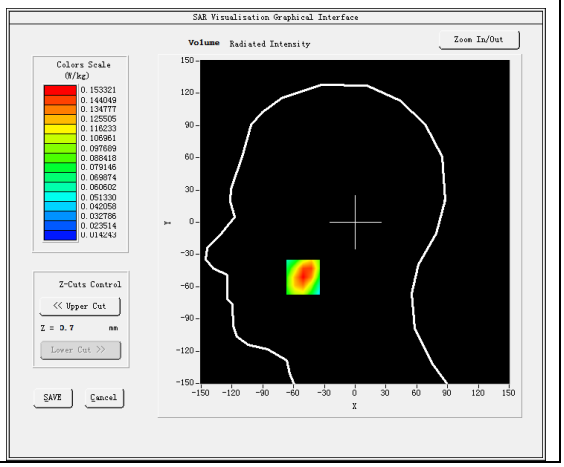
Date of measurement: 24/10/2023

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	LTE band 25
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.63

B. SAR Measurement Results

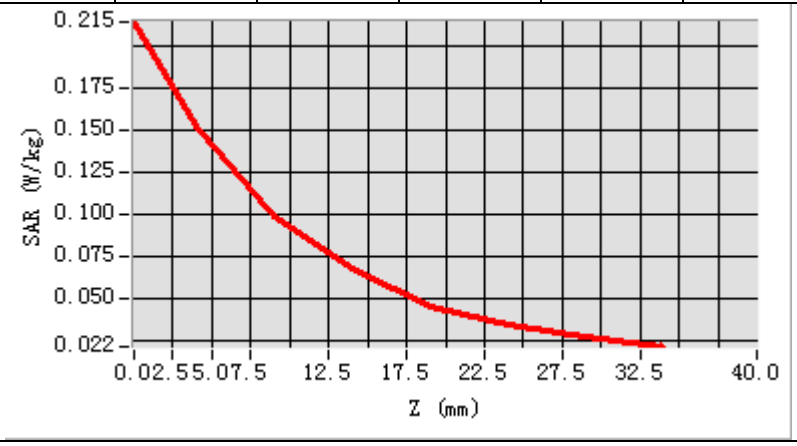
Frequency (MHz)	1882.500000
Relative permittivity (real part)	39.106178
Relative permittivity (imaginary part)	13.667142
Conductivity (S/m)	1.428976
Variation (%)	-3.820000

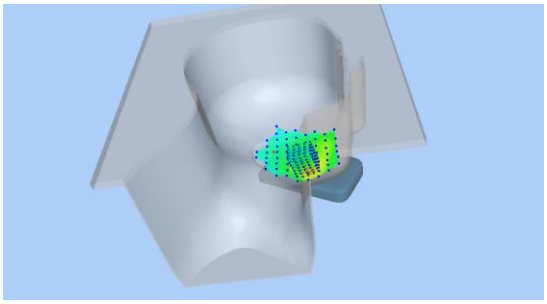
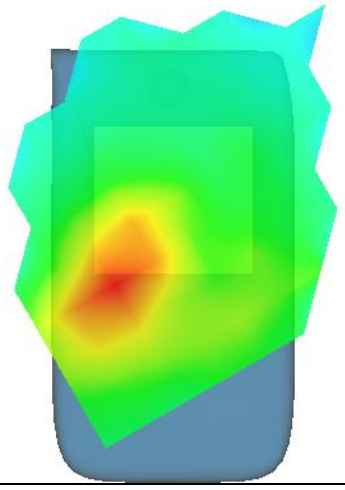
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.089185
SAR 1g (W/Kg)	0.148697

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2148	0.1533	0.0995	0.0684	0.0459	0.0348	0.0275



3D screen shot	Hot spot position
	

MEASUREMENT 26

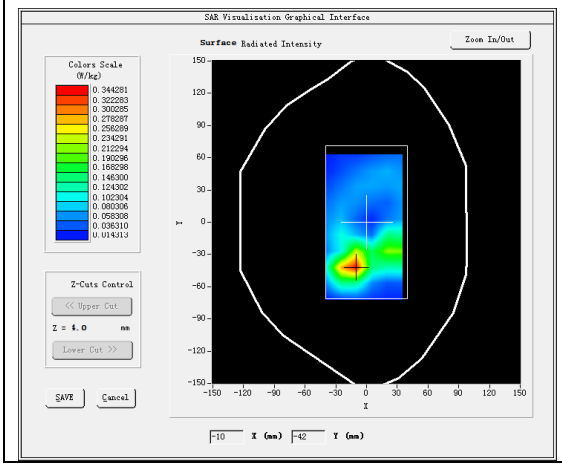
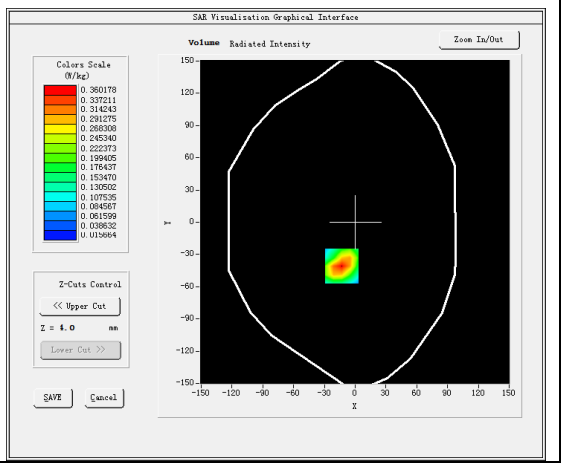
Date of measurement: 24/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 25
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.63

B. SAR Measurement Results

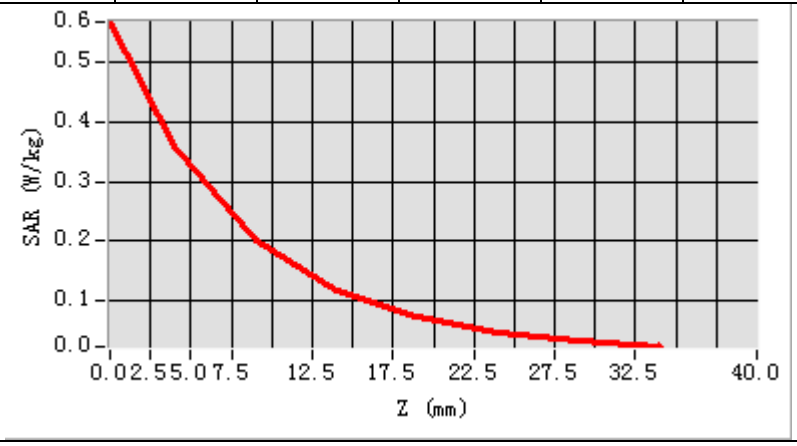
Frequency (MHz)	1882.500000
Relative permittivity (real part)	39.106178
Relative permittivity (imaginary part)	13.667142
Conductivity (S/m)	1.428976
Variation (%)	2.890000

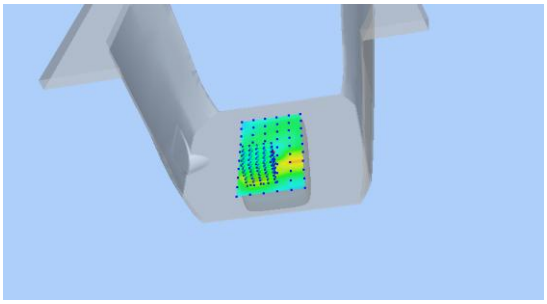
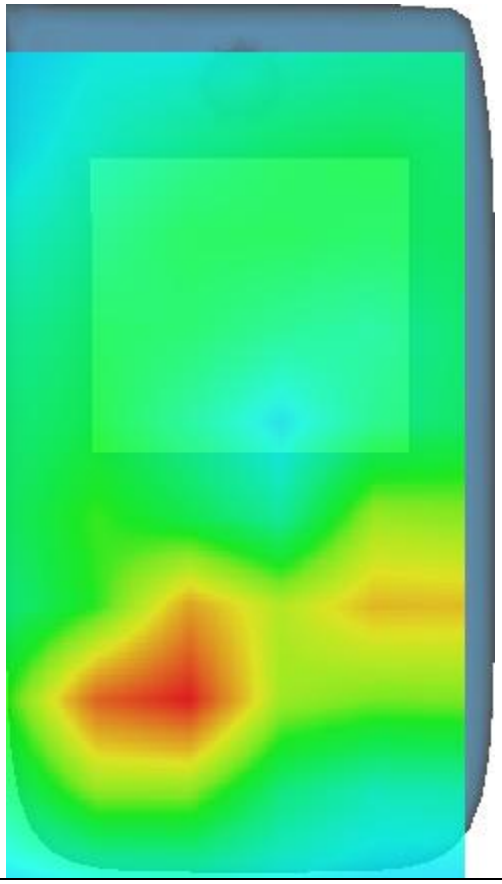
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-13.00, Y=-41.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.179410
SAR 1g (W/Kg)	0.343433

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5660	0.3602	0.2021	0.1189	0.0739	0.0471	0.0328



3D screen shot	Hot spot position
	

MEASUREMENT 27

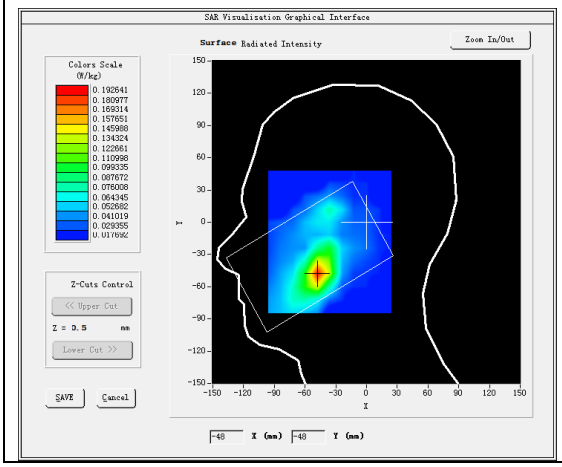
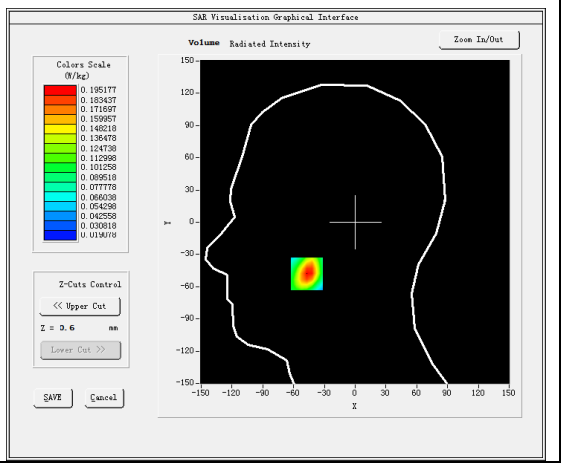
Date of measurement: 29/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

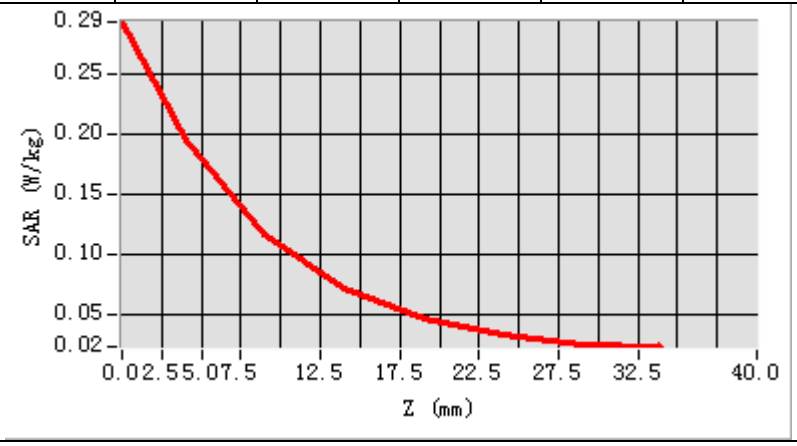
Frequency (MHz)	2593.000000
Relative permittivity (real part)	38.627872
Relative permittivity (imaginary part)	13.269114
Conductivity (S/m)	1.911490
Variation (%)	0.430000

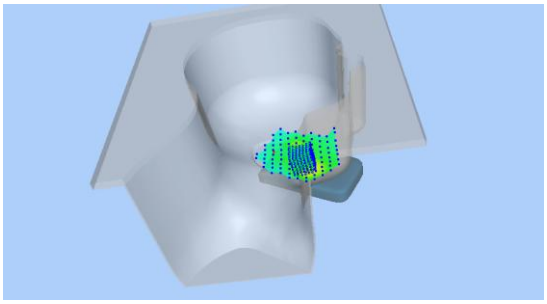
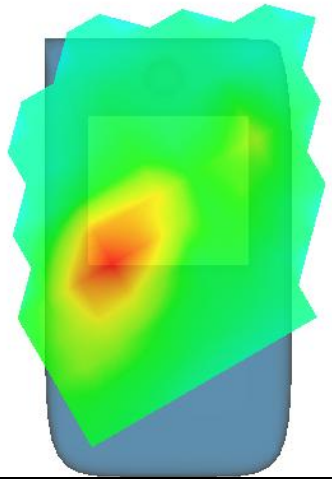
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-47.00, Y=-48.00
SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.098890
SAR 1g (W/Kg)	0.182398

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2940	0.1952	0.1166	0.0716	0.0461	0.0340	0.0252



3D screen shot	Hot spot position
	

MEASUREMENT 28

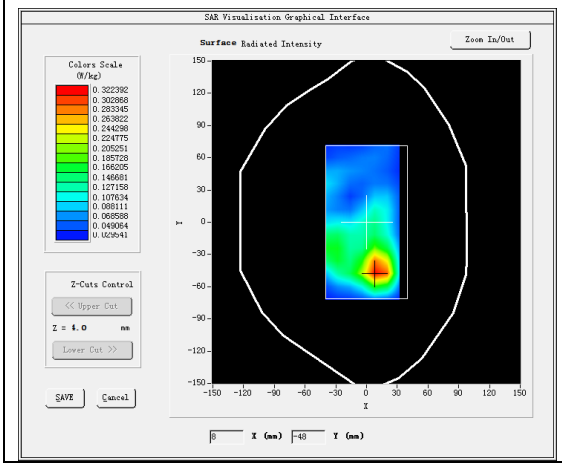
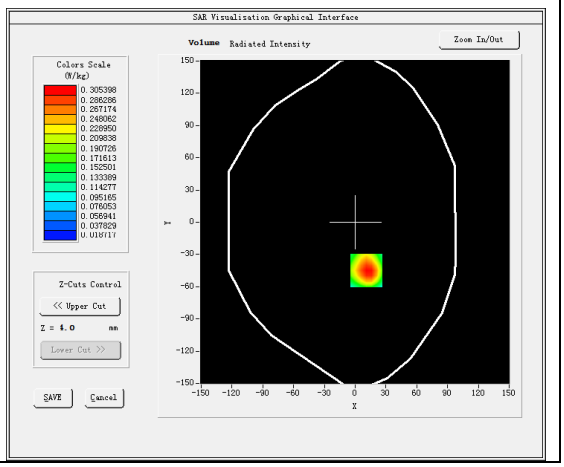
Date of measurement: 29/10/2023

A. Experimental conditions.

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

B. SAR Measurement Results

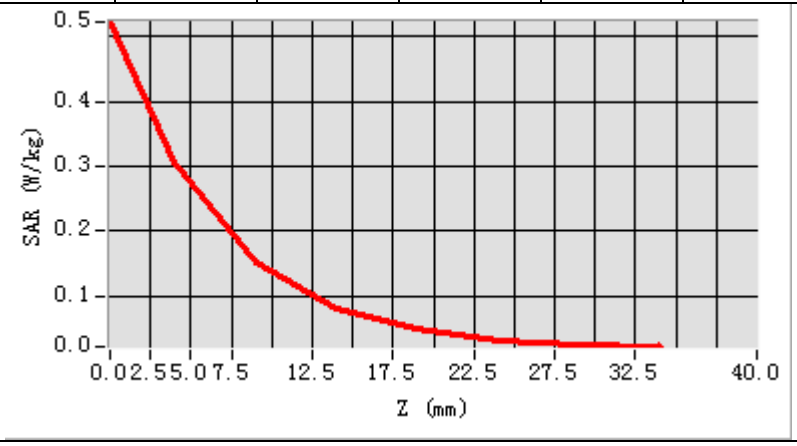
Frequency (MHz)	2593.000000
Relative permittivity (real part)	38.627872
Relative permittivity (imaginary part)	13.269114
Conductivity (S/m)	1.911490
Variation (%)	-4.850000

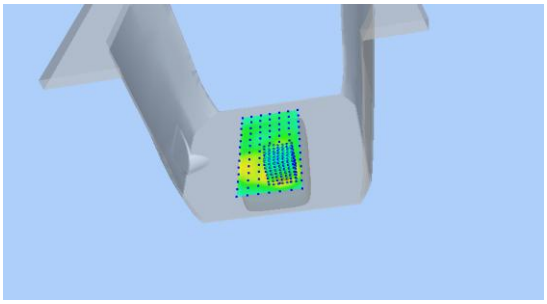
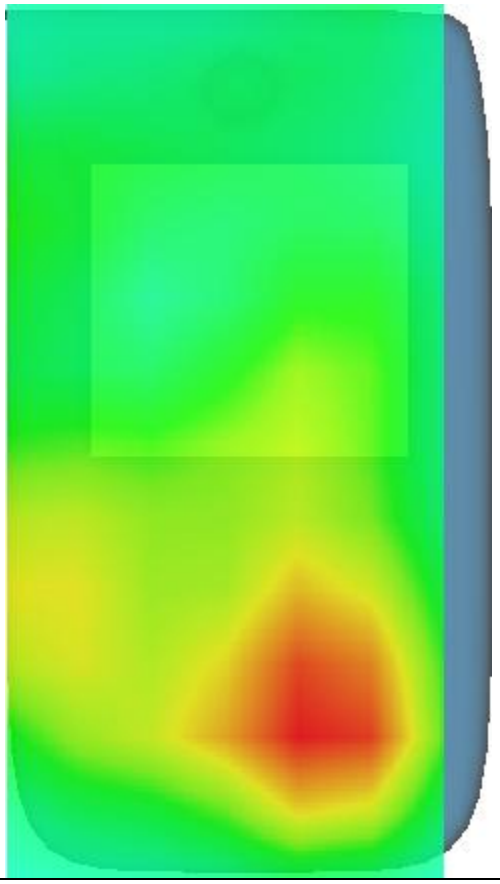
SURFACE SAR	VOLUME SAR
	

Maximum location: X=11.00, Y=-45.00
SAR Peak: 0.52 W/kg

SAR 10g (W/Kg)	0.152187
SAR 1g (W/Kg)	0.293655

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.5222	0.3054	0.1507	0.0802	0.0493	0.0310	0.0250



3D screen shot	Hot spot position
	

MEASUREMENT 29

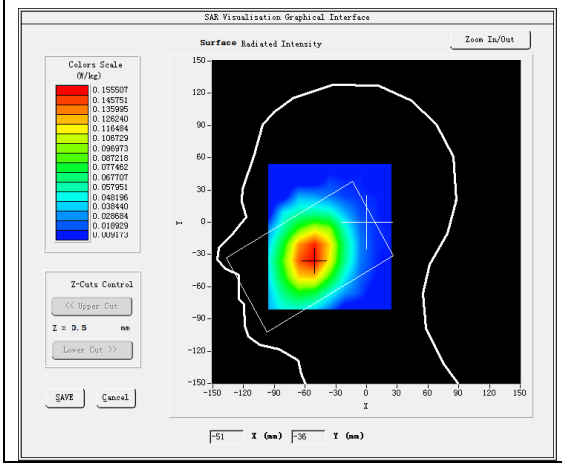
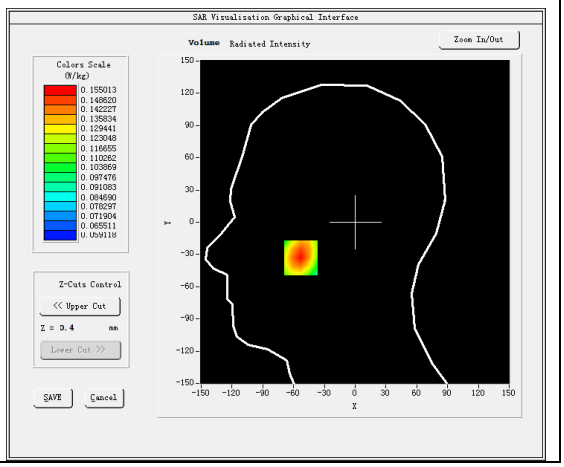
Date of measurement: 26/10/2023

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	FDDBand71
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.37

B. SAR Measurement Results

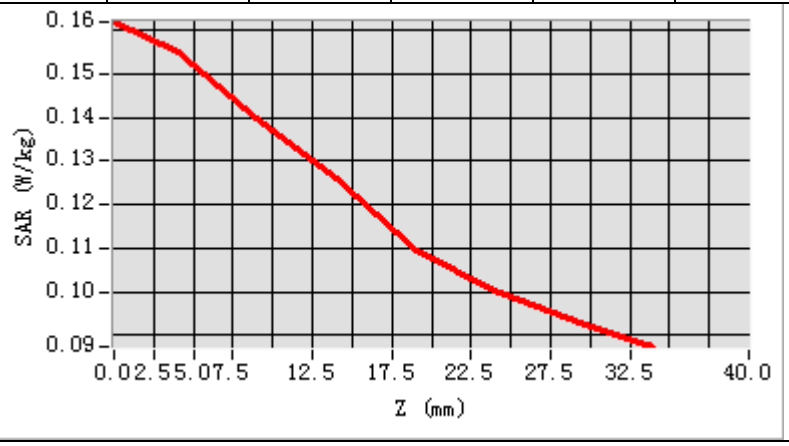
Frequency (MHz)	683.000000
Relative permittivity (real part)	43.080849
Relative permittivity (imaginary part)	22.290627
Conductivity (S/m)	0.845805
Variation (%)	-1.370000

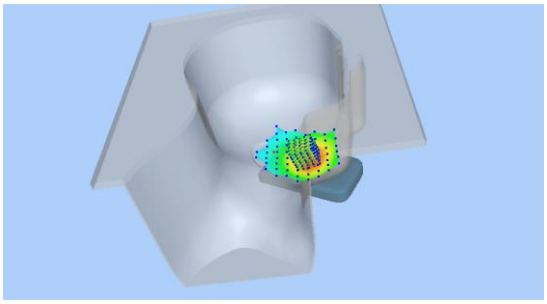
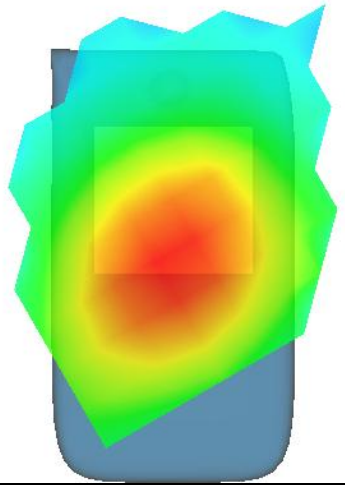
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-53.00, Y=-33.00
SAR Peak: 0.16 W/kg

SAR 10g (W/Kg)	0.126554
SAR 1g (W/Kg)	0.148669

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.1619	0.1550	0.1397	0.1261	0.1095	0.1005	0.0932



3D screen shot	Hot spot position
	

MEASUREMENT 30

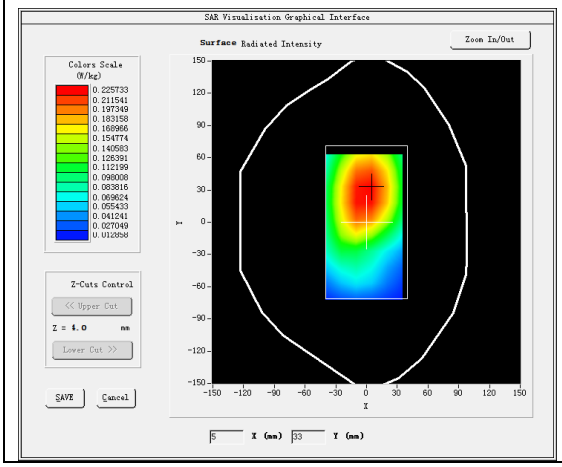
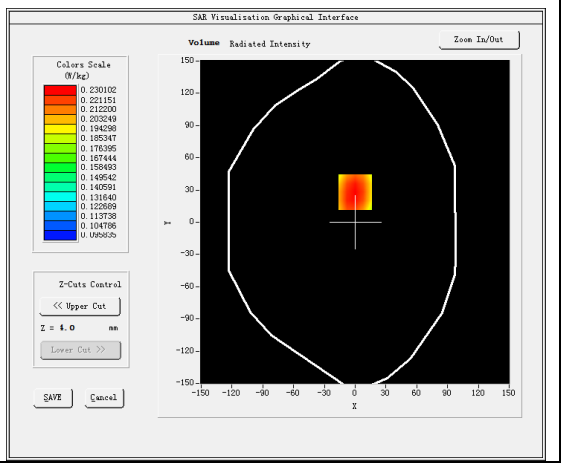
Date of measurement: 26/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand71
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.37

B. SAR Measurement Results

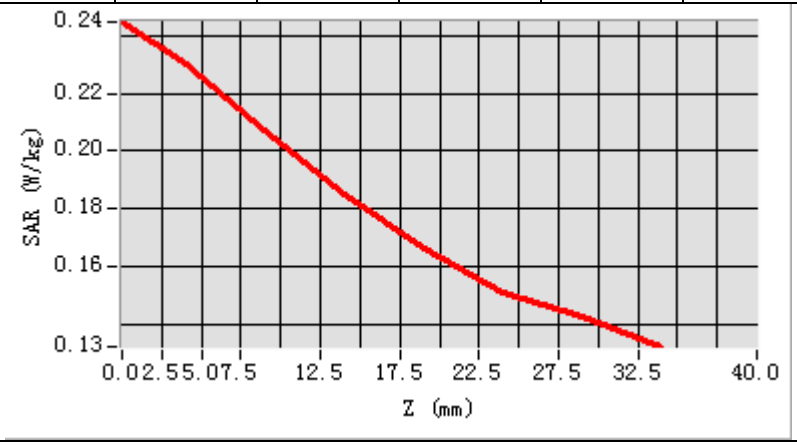
Frequency (MHz)	683.000000
Relative permittivity (real part)	43.080849
Relative permittivity (imaginary part)	22.290627
Conductivity (S/m)	0.845805
Variation (%)	0.200000

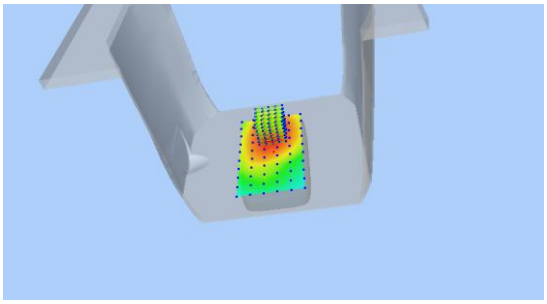
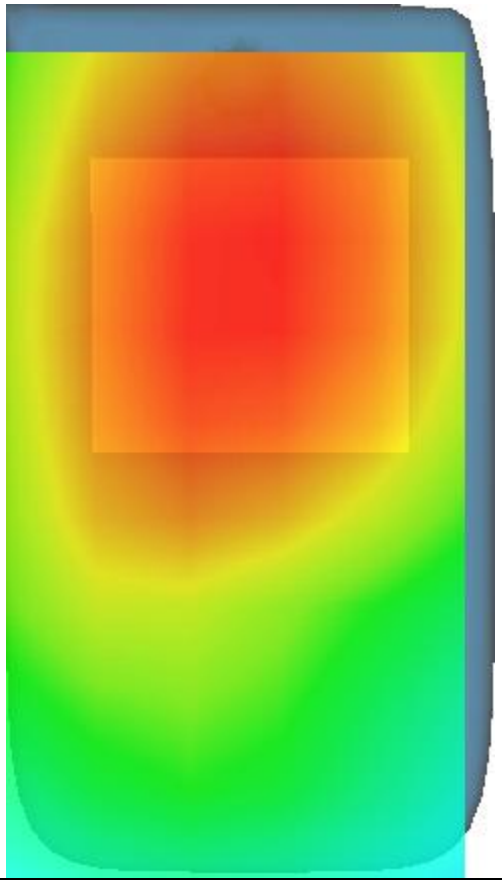
SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=28.00
SAR Peak: 0.25 W/kg

SAR 10g (W/Kg)	0.194537
SAR 1g (W/Kg)	0.224458

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2446	0.2301	0.2072	0.1851	0.1667	0.1514	0.1426



3D screen shot	Hot spot position
	

MEASUREMENT 31

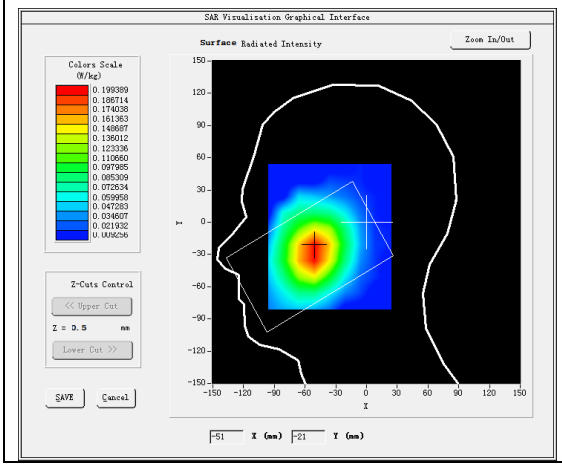
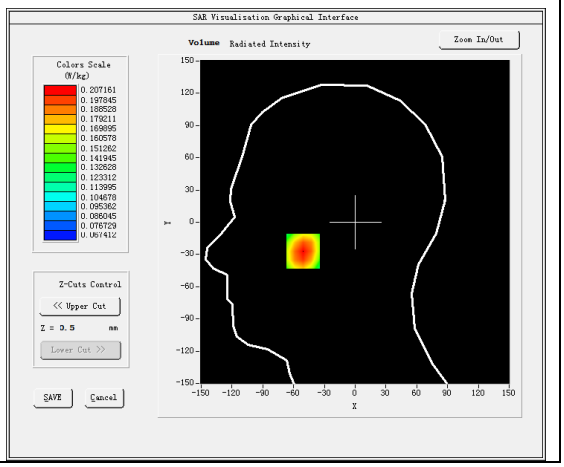
Date of measurement: 23/10/2023

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	FDDBand26A
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

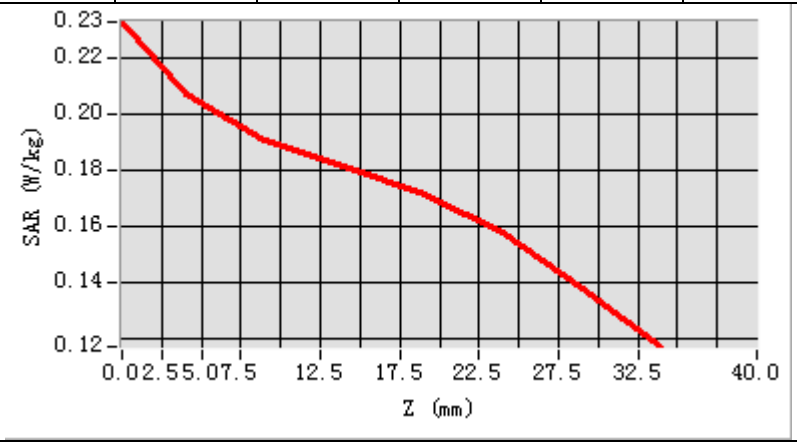
Frequency (MHz)	819.000000
Relative permittivity (real part)	41.820137
Relative permittivity (imaginary part)	19.354296
Conductivity (S/m)	0.880620
Variation (%)	2.840000

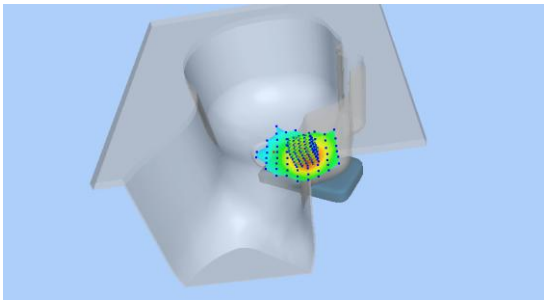
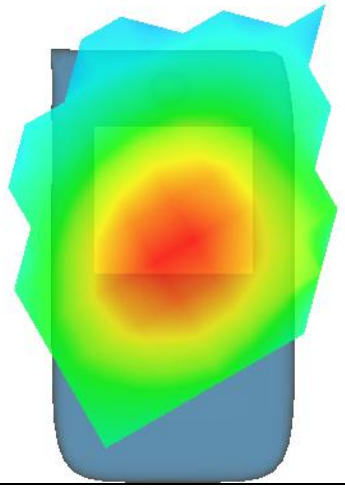
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-27.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.178164
SAR 1g (W/Kg)	0.205758

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2328	0.2072	0.1907	0.1814	0.1710	0.1580	0.1378



3D screen shot	Hot spot position
	

MEASUREMENT 32

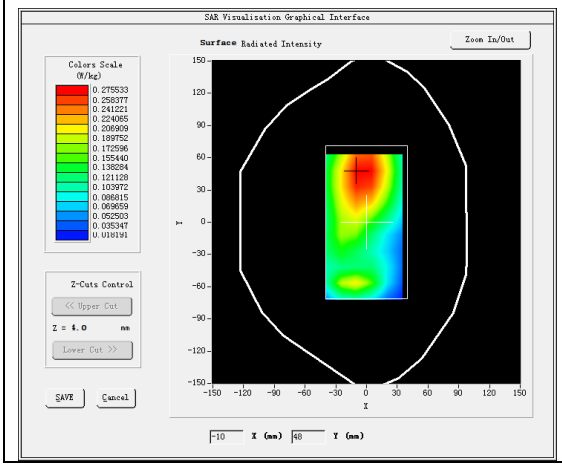
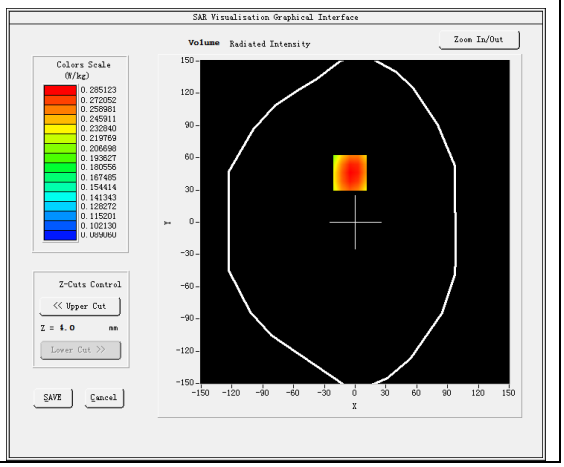
Date of measurement: 23/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand26A
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

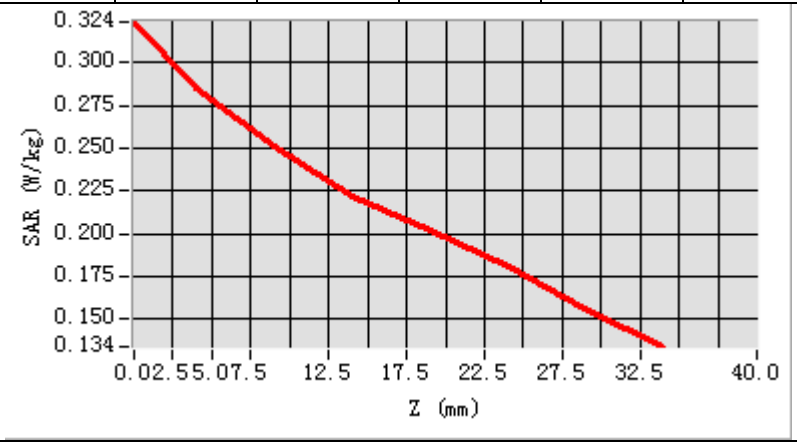
Frequency (MHz)	819.000000
Relative permittivity (real part)	41.820137
Relative permittivity (imaginary part)	19.354296
Conductivity (S/m)	0.880620
Variation (%)	-1.500000

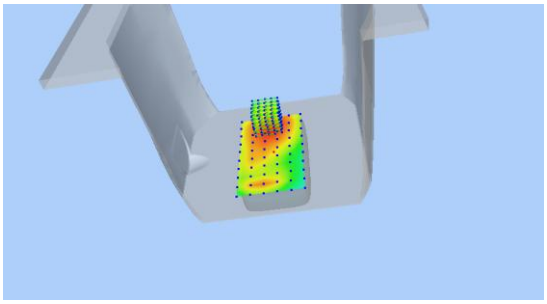
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-5.00, Y=46.00
SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.237407
SAR 1g (W/Kg)	0.281472

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3239	0.2851	0.2509	0.2226	0.2016	0.1805	0.1569



3D screen shot	Hot spot position
	

MEASUREMENT 33

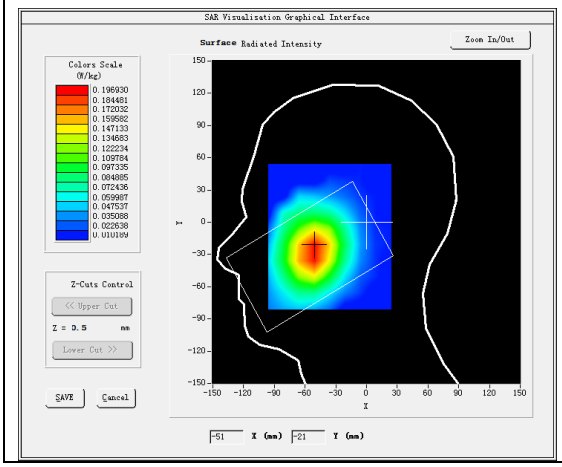
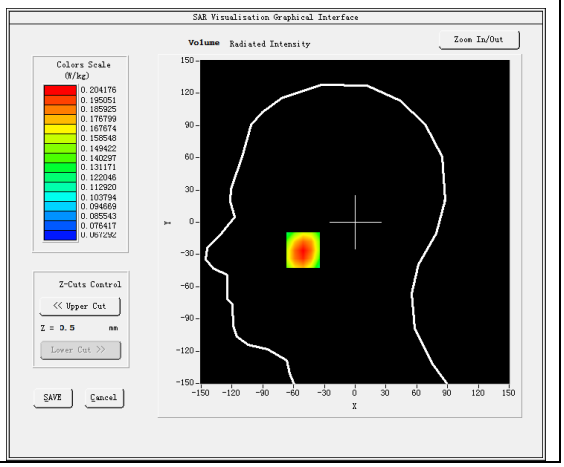
Date of measurement: 23/10/2023

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	FDDBand26B
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

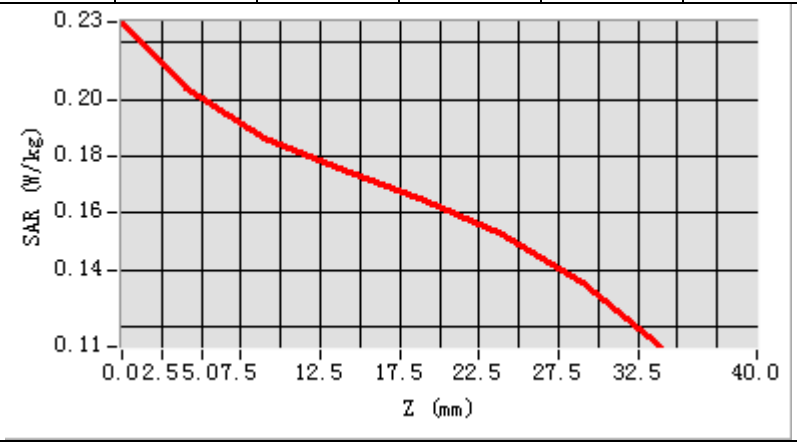
Frequency (MHz)	831.500000
Relative permittivity (real part)	41.613037
Relative permittivity (imaginary part)	19.410847
Conductivity (S/m)	0.896673
Variation (%)	1.590000

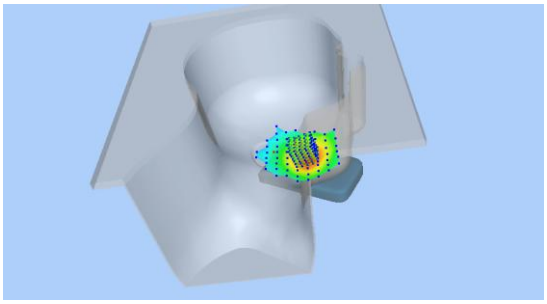
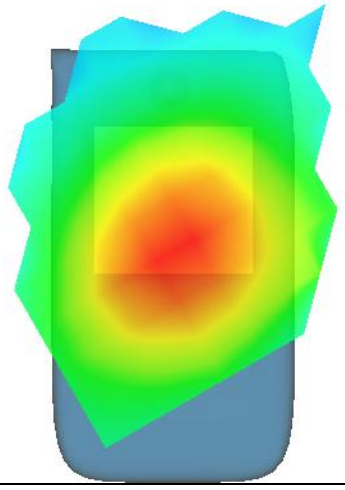
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-26.00
SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.173658
SAR 1g (W/Kg)	0.201420

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2273	0.2042	0.1862	0.1753	0.1647	0.1522	0.1353



3D screen shot	Hot spot position
	

MEASUREMENT 34

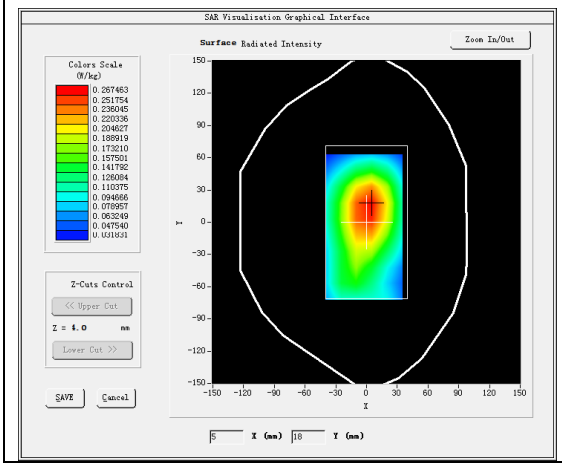
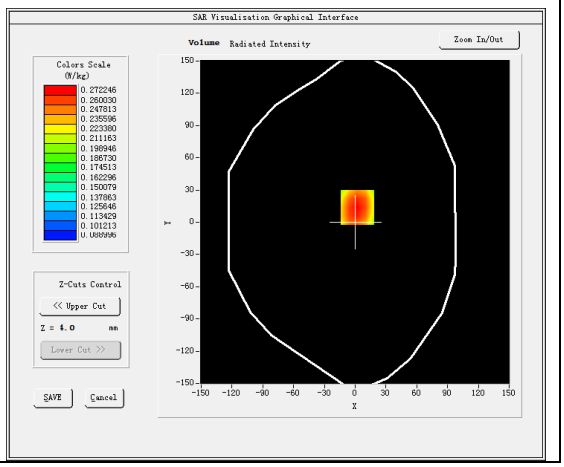
Date of measurement: 23/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand26B
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.32

B. SAR Measurement Results

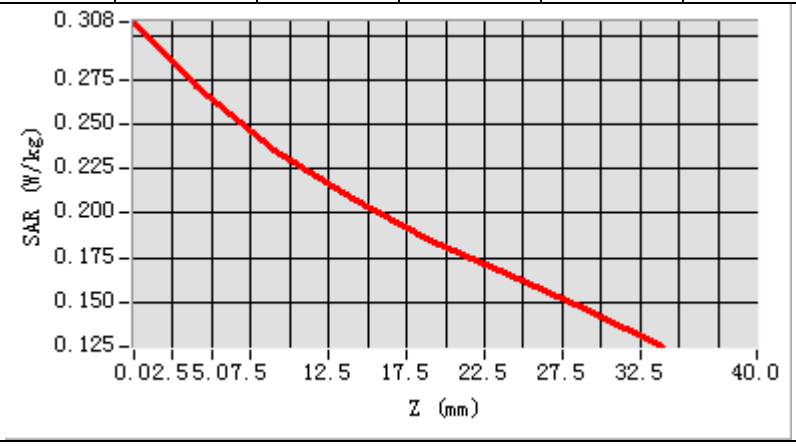
Frequency (MHz)	831.500000
Relative permittivity (real part)	41.613037
Relative permittivity (imaginary part)	19.410847
Conductivity (S/m)	0.896673
Variation (%)	-0.200000

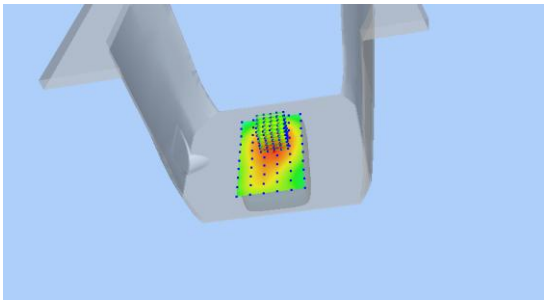
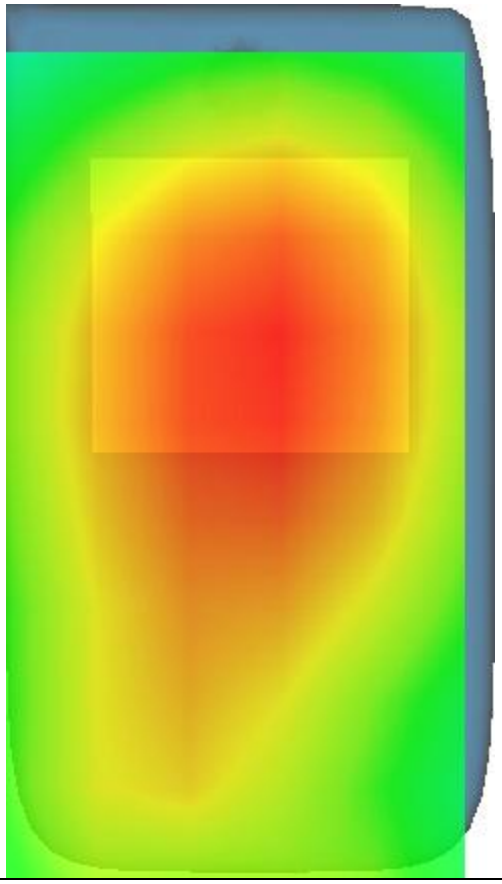
SURFACE SAR	VOLUME SAR
	

Maximum location: X=2.00, Y=14.00
SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.222929
SAR 1g (W/Kg)	0.266231

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3082	0.2722	0.2361	0.2082	0.1847	0.1651	0.1456



3D screen shot	Hot spot position
	

MEASUREMENT 35

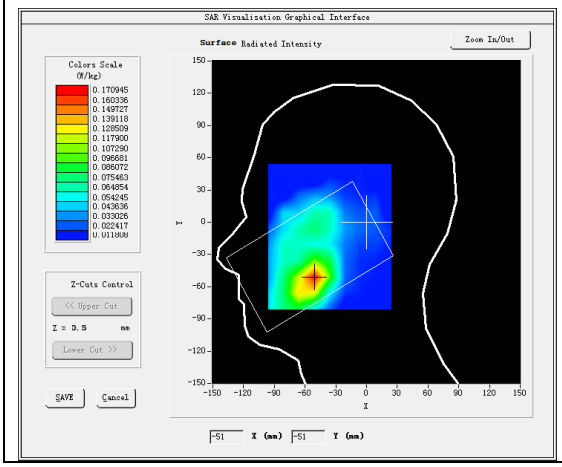
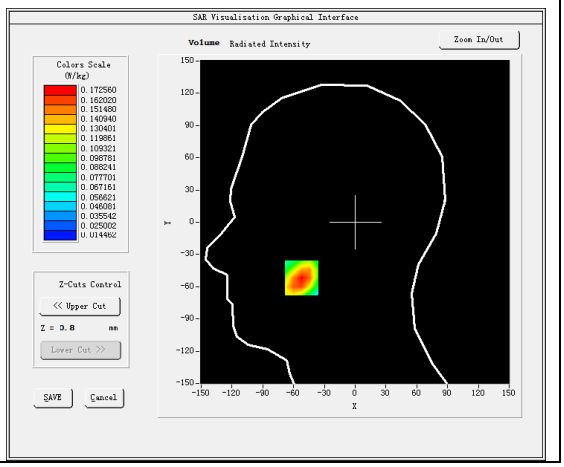
Date of measurement: 31/10/2023

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	FDDBand66
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.45

B. SAR Measurement Results

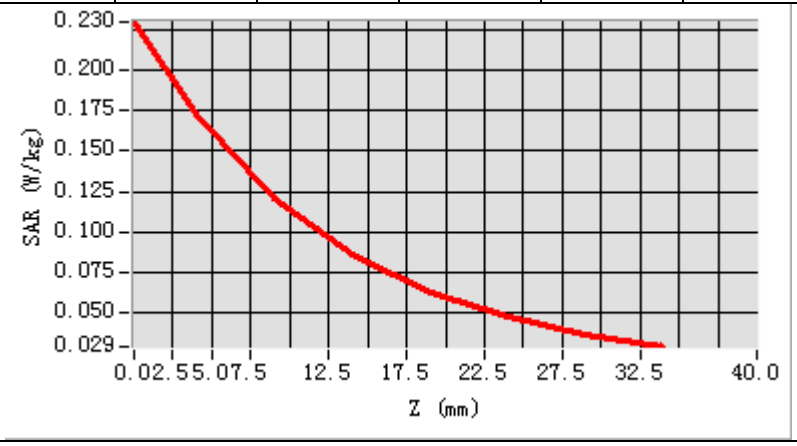
Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.451820
Relative permittivity (imaginary part)	14.253345
Conductivity (S/m)	1.381783
Variation (%)	4.650000

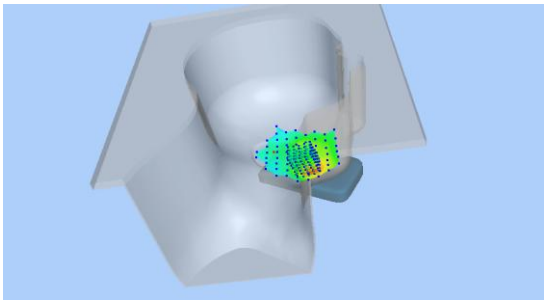
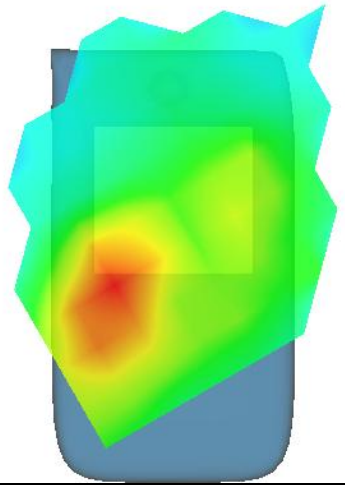
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-52.00
SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.105091
SAR 1g (W/Kg)	0.166035

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2301	0.1726	0.1204	0.0862	0.0617	0.0476	0.0364



3D screen shot	Hot spot position
	

MEASUREMENT 36

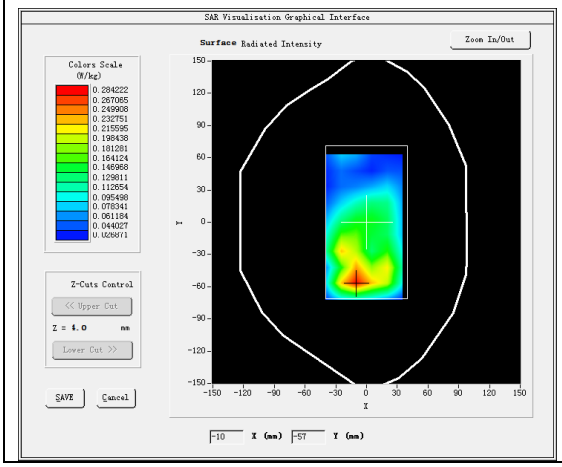
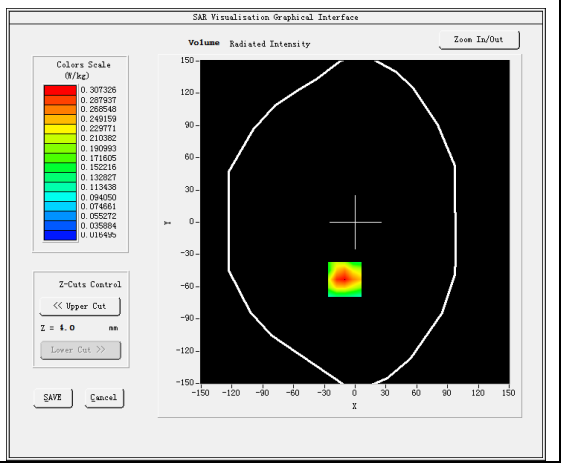
Date of measurement: 31/10/2023

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	FDDBand66
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.45

B. SAR Measurement Results

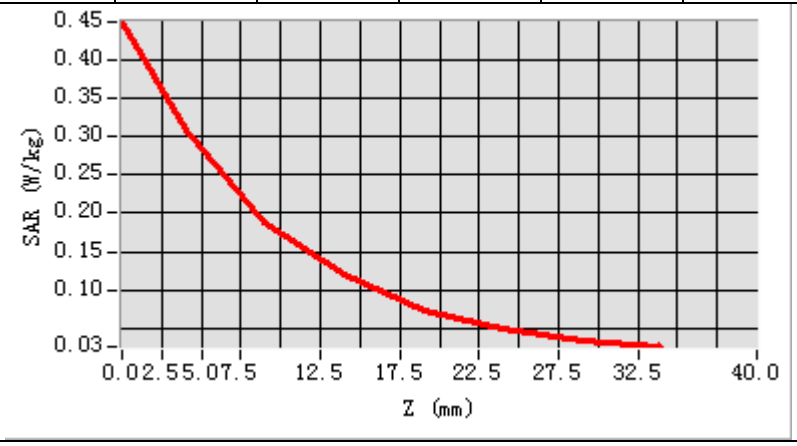
Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.451820
Relative permittivity (imaginary part)	14.253345
Conductivity (S/m)	1.381783
Variation (%)	0.440000

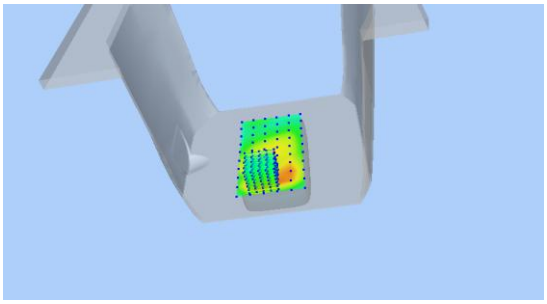
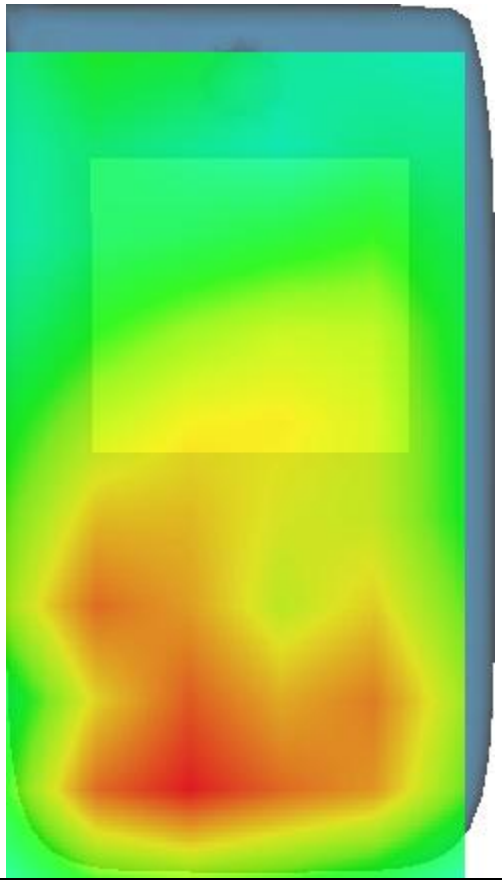
SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=-53.00
SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.165687
SAR 1g (W/Kg)	0.293588

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.4482	0.3073	0.1886	0.1197	0.0744	0.0500	0.0351



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
Extended Calibration Certificate

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

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 ID Signature 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

TABLE OF CONTENTS

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.

3.2 LINEARITY

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

3.3 ISOTROPY

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

3.4 BOUNDARY EFFECT

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

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

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

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 SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).

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.

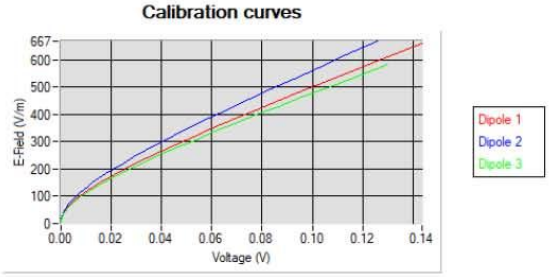
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

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.

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

where
Vi=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 (μV/(V/m)^2)	Normy dipole 2 (μV/(V/m)^2)	Normz dipole 3 (μV/(V/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.

$$ConvF = \frac{E^2_{liquid}}{E^2_{air}}$$

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

$$E^2_{liquid} = \frac{\rho\, SAR}{\sigma}$$

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:

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

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:

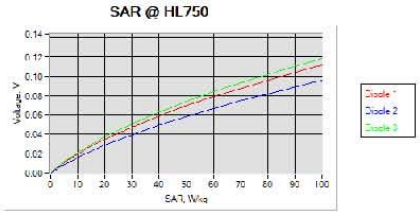
$$SAR = \frac{4P_W}{ab\delta} e^{\frac{-2z}{\delta}}$$

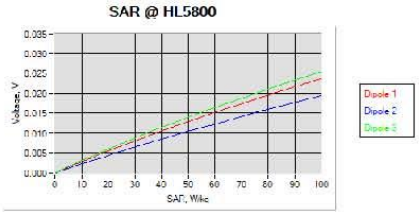
where
a=the larger cross-sectional of the waveguide
b=the smaller cross-sectional of the waveguide
δ=the skin depth for the liquid in the waveguide
Pw=the power delivered to the liquid

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	2.37
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

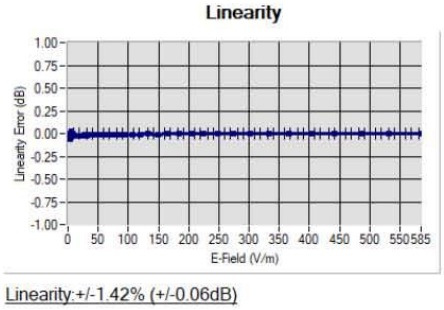
(*) Frequency validity is +/-50MHz below 600MHz, +/-100MHz from 600MHz to 6GHz and +/-700MHz above 6GHz



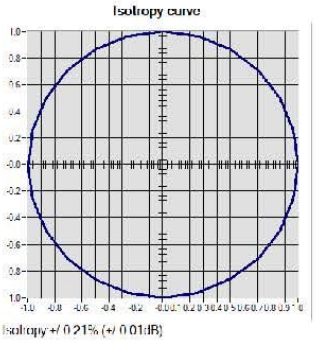


6 VERIFICATION RESULTS

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:+/-1.42% (+/-0.06dB)



Isotropy:+/-0.21% (+/-0.01dB)

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	08/2024
Network Analyzer	Agilent 8753ES	MY40003210	10/2019	10/2023
Network Analyzer – Calibration kit	HP 85033D	3423A08186	06/2021	06/2027
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	06/2024
Power Meter	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.
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.